A Bibliography of Publications by, and about, Magnus Rudolph Hestenes

Nelson H. F. Beebe
University of Utah
Department of Mathematics, 110 LCB
155 S 1400 E RM 233
Salt Lake City, UT 84112-0090
USA

Tel: +1 801 581 5254
FAX: +1 801 581 4148

E-mail: beebe@math.utah.edu, beebe@acm.org,
beebe@computer.org (Internet)
WWW URL: https://www.math.utah.edu/~beebe/

05 June 2024
Version 1.05

Abstract

This bibliography records publications of Magnus Rudolph Hestenes.

Title word cross-reference

$Ax = \lambda Bx$ [HK51a]. E [Hes46c].

-function [Hes46c].

13-15 [Cra87]. **1968** [ZNB69]. **1970** [Rei71a]. **1987** [Cra87].

2 [Tab70]. **23** [PT53]. **2nd** [ZNB69].

447 [Jer77].

6 [Tab70].

70th [Rus76].

Academic [Tab70]. **Accelerated** [Jit80]. **ACM** [Cra87]. **adaptive** [DLLL19]. **adjoint** [Hes61c]. **affine** [DHG+17]. **Algebra** [Hes62c, LH91, Hes73b, SM02]. **algebraic** [FHW48, Mae54]. **algebraischer** [Mae54]. **algebras** [BI64]. **Algorithm** [SLLT18, WZ14, LLW22, YZ13, YML16]. **Algorithms** [Ano22, DS00, GO89, HWY20, WSH+17, Wan23]. **alternate** [Hes47a]. **analogue** [Hes41b]. **Analysis** [HT91, PT53, Hes54, Hes76b, Hes87]. **Andenken** [Zus79]. **Anelli** [BP77]. **Angeles** [PT53]. **application** [HM40, HWY20, LLW22]. **Applications**

[Hes50b, Hes51a, Hes62c, LH91, Rei71a]. **applied** [Roc73]. **appreciation** [Mie74]. **approach** [BKG15, SM02]. **April** [Rei71a]. **Armijo** [DW12]. **articles** [Ano74]. **Artinian** [Cag80, Pro77]. **artiniani** [BP77]. **Auflösung** [Mae54]. **Augmentability** [Hes80a]. **augmented** [wDLLQ09, For75]. **August** [PT53].

B70 [Tab70]. **B70-6** [Tab70]. **Balakrishnan** [Dre65, Tab70]. **based** [BKG15, Sug14, WSH$^+$17, Zha09]. **basis** [Hes34a]. **Beckenbach** [Dea64]. **BFGS** [BKG18]. **bilateri** [BP77]. **Biorthogonalization** [Hes58]. **Bipedal** [SLLT18]. **birthday** [Rus76]. **Bolza** [BH33a, Hes33c, Hes34a, Hes34c, Hes34d, Hes34e, Hes36c, Hes36b, Hes37, Hes39, Hes42, Hes46a, Hes47a, Hes47b]. **Book** [Buk67, Cul77, Dea64, Dre65, Jer77, Ste82]. **boundary** [Sny82]. **Bounded** [Gui65a].

calculation [HK51b]. **Calculus** [BH35a, BH35c, BH35d, Buk67, Hes33e, HB33, Hes34d, Hes49, Hes50a, Hes50b, Hes56b, Hes66b, Hes80b, Hes13, Rus76, You68, BH35b, BH32, BH33a, BH33b, Bol01, Hes33a, Hes33d, Hes33c, Hes34b, Hes34c, Hes34e, Hes36c, Hes37, Hes38, Hes39, HR39, HM40, Hes41b, Hes42, Hes46a, Hes46b, Hes46c, Hes48, Hes51a, Hes66a]. **California** [PT53]. **Case** [Hes75b, Cul77, Jer77]. **Catherine** [Rei71a]. **Center** [Rus76]. **Century** [Ano22, Lid01]. **certain** [HR74a, HR74b]. **CG** [CLS24, HAE21]. **characteristic** [HK51b]. **characterization** [Sci77]. **Chisholm** [Rus76]. **Chronicle** [Lid01]. **class** [Wan23]. **close** [RLHK51]. **coefficient** [RMMF10]. **Collection** [Ano74]. **College** [Rei71a]. **combination** [DHG$^+$17, Rup75]. **combined** [BGR05]. **Computation** [Cra87]. **computational** [Hes55]. **Computer** [Lee95, Zus79]. **Computerentwicklung** [Zus79]. **Computing** [Nas90, ZNB69, ZNB69, Dre65, Tab70]. **condition** [DLHY15, Hes33a, Hes34b, HR39, Pel91, Zha09]. **Conditions** [BH35c, BH35d, Hes32b, HB33, Hes34d, BH32, BH33b, Hes31, Hes32a, Hes33b, Hes33d, Hes33c, Hes34e, Hes36b, Hes46a, Hes48, KBA23b]. **conducted** [Rus76]. **Conference** [Cra87, Rei71a, ZNB69]. **Conjugacy** [Hes87, Hes90, DLHY15, KBA23b]. **Conjugate** [GO89, HS52, Hes56a, Hes75c, Hes78a, Hes80c, O'L01b, Rai17, Rei71b, SLLT18, AFP19, BKG15, BKG17, BSA18, DC05, DW12, DLHY15, DLL$^+$17, DHG$^+$17, DLLL19, FA21, GXS95, Heg88b, Heg88a, HWY20, KBA23b, LLW22, NK21, QHL96, RMMF10, SW15, SA16, Shi01, WSH$^+$17, Wan23, WHT10, YZ13, YML16, Zha09, Ste82]. **Considered** [Gui65b]. **considering** [KBA23a]. **constrained** [wDLLQ09, HKH$^+$22, SL15]. **constraints** [AKAW19]. **Contributions** [Hes33e]. **Control** [Buk67, Hes65, Hes66b, Hes69c, Hes80b, Rus76, You68, Dur99, Hes64, Hes66a, Hes75a, Hes76a]. **Controller** [SLLT18]. **Convergence** [Rai17, BSA18, DW12, GXS95, Jit80, SW15, Sci77, Shi01, SL15, WHT10, ZZ12, ZZ13]. **Convergent** [SLLT18]. **convex** [AKAW19, Roc73]. **Coordinates** [Gui65a]. **critical** [Hes45]. **CUDA** [CMN18].

Dai [BKG15, NK21]. **Dan** [DC05]. **Date** [Ano22]. **Deaths** [Ano91a]. **Decomposition** [WZ14]. **decompositions** [BI64]. **Dedicated** [Rus76, Ano74]. **derivative** [HKH$^+$22]. **derivative-free** [HKH$^+$22]. **Derivatives** [Rai17]. **descent** [BKG17, BSA18, DLHY15, KBA23a, KBA23b, SRMM14, Wan23]. **Describing** [CC97]. **Determination** [Hes53, PT53]. **development** [Zus79]. **differentiable** [For75, Hes41a]. **Differential** [O'L01a, Hes61b, HG68]. **Dimensional**

[Cul77, Hes75b, Jer77]. **direct** [BI64, Heg88b, Hes37]. **Direction** [Hes80c, Rai17, Ste82, Hes78a]. **directions** [Heg88b, Heg88a]. **Discovers** [Ano22]. **discrete** [Dur99]. **dual** [SW75].

Edited [Dea64]. **Editors** [DS00]. **Eds** [Tab70]. **Eduard** [Zus79, Zus79]. **Edwin** [Dea64]. **effective** [Cag80]. **effettivi** [BP77]. **efficient** [DLLL19, SA16]. **Eigenvalue** [O'L01a]. **Eigenvalues** [PT53, Hes53, RLHK51]. **eigenvectors** [Hes53]. **Elementary** [Hes50a]. **Elements** [Hes56b, Hes66a, Hes13]. **elliptic** [Hes61b]. **embedding** [HG68]. **End** [Hes32b, Hes31, Hes33b]. **End-Points** [Hes32b, Hes31]. **Endpoint** [Hes49]. **endpoints** [Hes32a]. **Engineer** [Bec56, Bec62, Bec13a, Bec13b, Dea64]. **Engineering** [LH91, SW75]. **Equation** [Rei71b]. **Equations** [AMI+21, Hes51b, HS51, PT53, Rei71a, AKAW19, AWK+20, FHR51, FHW48, HKH+22, Hes61b, HG68, Hes73a, HS73, Mae54, SL15, YML16]. **ETH** [Zus79, Zus79]. **Exactness** [wDLLQ09]. **examples** [CLS24]. **Excellence** [Lid01]. **Extension** [Hes41a, DLLL19, FW98a, FW98b, Pel91]. **Extensions** [BKG17].

F [Dea64, You68]. **family** [KBA23a, KBA23b]. **Finite** [Cul77, Hes75b, Jer77]. **First** [Bec56, Bec13a]. **Fixed** [Hes49]. **form** [Hes34c, Hes36c, Hes47b]. **Formalization** [CC97]. **Forms** [Hes68, HM40, Hes51a]. **FPGA** [WZ14]. **free** [HKH+22]. **function** [wDLLQ09, Hes41a, Hes46c]. **functionals** [For75, HR74a, HR74b]. **Functions** [Hes36a, FW98a, FW98b].

Gage [Fri73]. **gaps** [SW75]. **General** [Heg88b, Heg88a, Hes32b, Hes50b, Hes31, Hes33b]. **Generalized** [BH35a, BH35b, FW98a, FW98b, Hes39, FW08]. **German** [Mae54, Zus79]. **Gleichungen** [Mae54]. **Global** [DW12, GXS95, BSA18, SW15, Shi01]. **GMRES** [CLS24]. **GPU** [CMN18]. **GPU-CUDA** [CMN18]. **Gradient** [GO89, Hes56a, SLLT18, AFP19, BKG15, BKG17, BSA18, DC05, DW12, DLHY15, DLL+17, DHG+17, DLLL19, FA21, GXS95, Hes69a, Hes69b, HWY20, KBA23b, LLW22, NK21, QHL96, RMMF10, SW15, SA16, Shi01, WSH+17, Wan23, WHT10, YZ13, YML16, Zha09]. **Gradients** [HS52, Hes75c, O'L01b, Rei71b, HK51b, Hes87, Hes90]. **Gram** [Rai17]. **Green** [Hes41b]. **Guest** [DS00].

held [PT53, Rei71a]. **Hermitian** [Hes61a]. **Hestene** [Rai17]. **Hestenes** [Buk67, Cul77, Jer77, AMI+21, AFP19, Ano74, Ano91a, Ano91b, Anoxx, AKAW19, AWK+20, BKG15, BKG17, BKG18, BF81, BSA18, BP77, BI64, BCH+91, Ber92, BGR04, BGR05, Cag80, Cag81, Cha91, CC97, CMN18, DC05, DW12, DLHY15, DLL+17, DHG+17, DLLL19, wDLLQ09, Dur99, FA21, FW98a, FW98b, FW08, For75, Fri73, Gui65a, Gui65b, GXS95, HAE21, Han88, HKH+22, Heg88b, Heg88a, HWY20, JBM21, Jit80, KBA23a, KBA23b, Lee95, LLW22, Mie74, NK21, Pel91, Pro77, QHL96, RMMF10, Roc73, Rup75, SW15, SA16, Sci77, SRMM14, Shi01, Smi69, Sny82, Spe76, Spe78, Ste82, SW75, Ste68, Ste73, Sug14, SM02, SL15, SLLT18, WZ14, WSH+17, Wan23, WHT10, You68, YZ13, YML16, Zha09, ZZ12, ZZ13]. **Hilbert** [Hes51a, Hes54, Hes61c]. **Hill** [Dea64]. **History** [Cra87, GO89, Nas90]. **HSNC'87** [Cra87]. **hybridization** [BKG15, BKG18, NK21]. **Hypotheses** [Gui65b].

ideal [Cag81]. **ideali** [BP77]. **ideals** [Cag80]. **II** [Heg88a, Hes34e, HR74b]. **Image**

[AMI+21, CC97, HKH+22, HWY20, Wan23]. **Implementation** [CMN18, WZ14]. **INA** [HT91]. **indefinite** [BGR04]. **indirect** [Hes47b]. **inequality** [wDLLQ09]. **inexact** [BGR05]. **Institute** [HT91, PT53, Rei71a]. **Integral** [O'L01a, Hes48]. **interior** [BGR04]. **interior-point** [BGR04]. **International** [ZNB69]. **Introduction** [DS00, Hes50a, Hes62a, Hes62b, Smi69]. **inverse** [Sug14]. **Inversion** [Hes58]. **Isoperimetric** [BH35c, BH35d, Hes38, Hes46a]. **Italy** [ZNB69]. **Iteration** [O'L01a]. **Iterative** [FHR51, Hes51b, Hes55, Hes73a, Mae54]. **iterativen** [Mae54].

Jacobi [CMN18, Hes33a, Hes34b, WZ14]. **Jacobi-One-Sides** [CMN18]. **Jacobson** [Ste68, Ste73]. **Jersey** [Cra87]. **John** [Jer77].

Karush [BGR05]. **kinematics** [Sug14]. **Kuhn** [BGR05].

L [Tab70]. **Lagrange** [Hes33d, Hes34a, Hes36b]. **Lagrangian** [wDLLQ09, For75]. **Lanczos** [GO89]. **Large** [Rei71a, Rei71b, DLL+17, Wan23, YZ13, YML16]. **large-scale** [DLL+17, Wan23, YZ13, YML16]. **Laurence** [Rus76]. **Least** [Hes50b, BKG15]. **least-squares** [BKG15]. **lemma** [FW98a, FW98b, FW08]. **light** [SM02]. **like** [AKAW19]. **Lindeberg** [Hes46b]. **line** [DW12, JBM21]. **Linear** [CC97, Hes51b, HS51, HS52, Hes56a, Hes62c, LH91, O'L01a, O'L01b, PT53, Rei71a, Rei71b, BKG18, FHR51, FHW48, Hes61b, Hes73a, HS73, NK21, SL15]. **London** [Jer77]. **Lucien** [Dre65].

M [Mie74]. **M.** [Buk67]. **Madison** [Rus76]. **Magnus** [Cul77, Jer77, Ste82, Ano74, Ano91a, Ano91b, Anoxx, BCH+91, Ber92, Cha91, Lee95, You68]. **Mathematics** [Bec56, Bec62, Bec13a, Bec13b, Dea64, LH91, Rei71a, Rus76]. **Matrices** [Hes58, Hes62c, Hes53, Hes61a]. **matrix** [HK51b, RLHK51]. **May** [Cra87]. **Mayer** [BH32, BH33b, Hes31, Hes32b, Hes32a, Hes33b, HB33]. **McGraw** [Dea64]. **McGraw-Hill** [Dea64]. **Measurements** [Lid01]. **memory** [Ber92, Zus79]. **memoryless** [BKG18]. **Method** [AMI+21, CMN18, HAE21, Han88, Hes56a, O'L01a, Rai17, Rei71b, AFP19, AKAW19, AWK+20, BKG18, BSA18, BGR04, BGR05, DC05, DW12, DLHY15, DLLL19, Dur99, FA21, For75, GXS95, HKH+22, HK51b, Jit80, KBA23a, KBA23b, NK21, QHL96, Roc73, Rup75, SW15, SA16, Sci77, SRMM14, Shi01, Sny82, SW75, Sug14, SL15, WHT10, Zha09, ZZ12, ZZ13]. **Methods** [Hes49, Hes51b, HS52, Hes80c, O'L01b, Ste82, Tab70, ZNB69, BKG15, BKG17, DLL+17, DHG+17, Dre65, FHR51, Hes54, Hes55, Hes69a, Hes69b, Hes73a, Hes78a]. **minimal** [Cag81]. **Minimax** [BH35a, Hes36a, BH35b]. **Minimization** [For75, HS51, HS73, HR74a, HR74b]. **minimizations** [YML16]. **mixed** [DC05]. **Modern** [Bec56, Bec62, Bec13a, Bec13b, Dea64]. **modification** [JBM21, SA16, SRMM14]. **Modifications** [HAE21]. **Modified** [RMMF10, AFP19, BSA18, DW12, DLHY15, DLL+17, HWY20, KBA23b, LLW22, QHL96, Shi01, SL15, WHT10, YZ13, YML16, ZZ13]. **Monotone** [AMI+21, AKAW19, AWK+20]. **Motroni** [Fri73]. **multiple** [Hes48]. **Multiplier** [Hes69a, Hes69b, BGR05, Jit80, Roc73, Rup75, Sug14]. **multipliers** [Sci77, SW75].

Natural [BH35c, BH35d]. **NBS** [Ano22, HT91, Lid01]. **NBS-INA** [HT91]. **NBS/NIST** [Lid01]. **necessary** [Pel91]. **Neustadt** [Tab70, Dre65]. **Newton** [BGR05, KBA23a, Rup75]. **NIST** [Lid01].

no [Cag80]. **non** [For75]. **non-differentiable** [For75]. **nonconvex** [ZZ13]. **Nonlinear** [AMI+21, AKAW19, AWK+20, DW12, HKH+22, SA16, Sny82, SL15, YML16, Zha09]. **nonmonotone** [DLL+17]. **nonparametric** [Hes47b]. **nonsmooth** [YML16]. **normal** [Hes47a]. **note** [BH33a, Hes33a, Hes34b, HR39, ZZ12]. **Notes** [FHW48]. **Number** [Han88]. **Numeric** [Cra87]. **Numerical** [Dur99, Hes49, HT91, PT53, Rai17, Hes54]. **NY** [Tab70].

Obituary [BCH+91]. **Obtaining** [Hes49]. **occasion** [Rus76]. **One** [Ano22, CMN18]. **Operator** [AMI+21]. **Operators** [O'L01a, Hes61c]. **Optimal** [Buk67, Hes65, Hes66b, Hes69c, Hes80b, SLLT18, You68, AFP19, Dur99, Hes64]. **Optimization** [HAE21, Hes75b, Hes80c, Rai17, Tab70, ZNB69, Dre65, wDLLQ09, Hes78a, Hes78b, Hes80a, NK21, RMMF10, SW75, Wan23, YZ13, Zha09, ZZ13, Ste82, Cul77, Jer77]. **optimum** [Hes66a]. **original** [ZZ12]. **Osgood** [Bol01]. **Oxford** [Rei71a, Rei71a].

Pairs [Hes68]. **Papers** [ZNB69, Cra87]. **Parallel** [CMN18]. **parameter** [AWK+20]. **parametric** [Hes33a, Hes34b, Hes34c, Hes36c]. **partial** [Hes61b]. **Path** [Hes28]. **Paths** [Hes50b]. **Pioneers** [Lee95]. **point** [BGR04, Sny82]. **Points** [Hes32b, Hes31, Hes33b, Hes45]. **Polak** [BKG17]. **polarization** [SM02]. **Polyak** [BKG17]. **Powell** [wDLLQ09, For75, Jit80, Roc73, Rup75, Sug14]. **pp** [Tab70]. **pp.** [Dea64]. **presented** [Cra87, ZNB69]. **Press** [Tab70]. **Primitive** [Cag81]. **Princeton** [Cra87]. **Principle** [BH35a, Hes36a, BH35b]. **prioritized** [Sug14]. **privi** [BP77]. **Problem** [Gui65a, Gui65b, Hes32b, HB33, Hes34d, Hes50b, O'L01a, BH32, BH33a, BH33b, Hes31, Hes32a, Hes33b, Hes33d, Hes33c, Hes34c, Hes34e, Hes36c, Hes37, Hes39, Hes42, Hes46a, Hes47a, Hes47b]. **Problems** [HAE21, Hes49, Tab70, ZNB69, DLL+17, wDLLQ09, Dur99, Hes33a, Hes34a, Hes34b, Hes36b, Hes38, Hes48, Hes75a, Hes76a, Hes78b, Hes83, Sny82, Wan23, Dre65]. **Proceedings** [Rei71a, Cra87, PT53, Rus76]. **processing** [AWK+20]. **Professor** [Mie74]. **programming** [Roc73]. **Projected** [SLLT18]. **projection** [AKAW19, AWK+20, LLW22, SL15]. **proof** [Bol01, Hes37, Hes38, Hes47a, Hes47b]. **properties** [wDLLQ09, SRMM14, ZZ12]. **property** [AFP19, BKG17, BSA18, SA16]. **pseudoinverse** [Hes76b]. **Pseudoinverses** [Hes75c]. **Publications** [Lid01].

Quadratic [Hes61b, Hes68, Hes75a, Dur99, HM40, Hes51a, HR74a, HR74b, Hes76a, Hes83]. **quasi** [KBA23a]. **quasi-Newton** [KBA23a]. **Quasiprimitive** [BF81].

R [Ano74, Ano91a, Ber92, Buk67, Cul77, Jer77, Lee95, Mie74]. **Radical** [Spe76]. **range** [Hes41a]. **Rapidly** [SLLT18]. **rate** [SL15]. **Rates** [Rai17]. **real** [HK51b, RLHK51]. **recursion** [Heg88b, Heg88a]. **recursions** [Heg88b, Heg88a]. **Reducing** [Han88]. **Related** [Hes58]. **Relative** [Hes61a, Hes61c]. **Remarks** [FW08]. **Remo** [ZNB69]. **Replies** [Fri73]. **Report** [Buk67]. **Research** [Rus76]. **resolve** [SW75]. **restart** [SA16]. **Restoration** [AMI+21, HKH+22, HWY20, Wan23]. **Results** [Hes58]. **reverse** [Heg88a]. **Review** [Cul77, Dea64, Dre65, Jer77, Ste82]. **Reviews** [You68]. **Ribière** [BKG17]. **right** [Cag80, Cag81]. **ring** [Spe76]. **Rings** [Ste68, BF81, Cag80, Cag81, Pro77, Smi69, Spe78, Ste73]. **Robots** [SLLT18]. **Robust** [Sug14, SLLT18]. **role** [Hes76b, Zus79].

Rolle [Zus79]. **roots** [HK51b]. **Rotating** [Hes28]. **Rudolf** [BCH+91]. **Rudolph** [Anoxx].

San [ZNB69]. **scale** [DLL+17, Wan23, YZ13, YML16]. **scheme** [BGR05]. **Schmidt** [Rai17]. **Science** [LH91]. **Scientific** [Cra87, Nas90]. **search** [DW12, JBM21]. **secant** [Zha09]. **Second** [Bec62, Bec13b]. **Selected** [Lid01]. **self** [Hes61c]. **self-adjoint** [Hes61c]. **semplici** [BP77]. **Separation** [RLHK51]. **September** [Rus76, ZNB69]. **Series** [Bec56, Bec62, Bec13a, Bec13b]. **Sets** [Rei71a]. **sided** [Cag80]. **Sides** [CMN18]. **signal** [AWK+20]. **Simple** [Cag80, Pro77]. **Simultaneous** [PT53, FHW48]. **Singular** [Hes83, WZ14]. **Solution** [HS51, O'L01a, Rei71b, BGR05, Dur99, FHW48, HS73, Mae54, Sug14]. **Solutions** [Hes49, HK51a]. **Solving** [HAE21, Hes51b, HS52, Hes56a, Hes78b, O'L01b, FHR51, Hes73a, Sny82]. **Some** [DHG+17, GO89, HWY20, For75]. **Sons** [Jer77]. **Space** [Gui65a, Hes51a, Hes54, Hes61c]. **spacetime** [SM02]. **Sparse** [Rei71a, Rei71b]. **Spectral** [SW15, AWK+20, FA21, KBA23a, WSH+17, Wan23]. **Sphere** [Hes28]. **squares** [BKG15]. **St** [Rei71a]. **Standards** [Lid01]. **Steifel** [RMMF10, SW15]. **Stiefel** [AMI+21, AFP19, AKAW19, AWK+20, BKG15, BKG17, BKG18, BSA18, DC05, DW12, DLHY15, DLL+17, DHG+17, DLLL19, FA21, GXS95, HAE21, HKH+22, Heg88b, Heg88a, HWY20, JBM21, KBA23a, KBA23b, LLW22, NK21, QHL96, SA16, SRMM14, Shi01, Sny82, SL15, SLLT18, WSH+17, Wan23, WHT10, YZ13, YML16, Zha09, ZZ12, ZZ13, Zus79]. **Stiefel-like** [AKAW19]. **strong** [JBM21, ZZ13]. **Structure** [Ste68, Ste73]. **sufficiency** [Hes37, Hes38, Hes47a, Hes47b]. **Sufficient** [BH32, BH33b, Hes31, Hes32b, Hes32a, Hes33b, HB33, Hes33d, Hes33c, Hes34d, Hes34e, Hes46a, Hes48, BKG17, BSA18, DLHY15, Hes36b, KBA23b]. **sum** [BI64]. **Sweeps** [Han88]. **Sydney** [Jer77]. **symmetric** [BGR04, HK51b, RLHK51]. **Symposium** [Rus76, PT53]. **system** [SW75]. **Systems** [HS52, Hes56a, O'L01b, Rei71b, BGR04, BGR05].

technique [BKG18]. **Technology** [Lid01]. **Term** [AMI+21, BSA18, DHG+17, DLLL19, FA21, HKH+22, KBA23b, Wan23, ZZ12]. **terms** [LLW22]. **ternari** [BP77]. **Ternary** [Hes62c, Ste68, BF81, Cag80, Cag81, Hes73b, Pro77, Smi69, Spe78, Ste73]. **Theorem** [Hes46b, Bol01, Hes34a, HM40, Hes41b, HG68]. **Theory** [Cul77, Hes65, Hes66b, Hes69c, Hes75b, Hes80b, Rus76, Ste68, Hes45, Hes51a, Hes54, Hes61b, Hes64, Hes66a, Hes80a, Hes87, Jer77, Ste73, Buk67, You68]. **Three** [AMI+21, BSA18, DHG+17, DLLL19, FA21, HKH+22, KBA23b, LLW22, Wan23, ZZ12]. **Three-Term** [AMI+21, BSA18, DHG+17, DLLL19, FA21, HKH+22, KBA23b, Wan23, ZZ12]. **Time** [Hes50b]. **Top** [Ano22, DS00]. **Toronto** [Jer77]. **Transformations** [Hes62c]. **Transforms** [CC97]. **Tribus** [Fri73]. **Tucker** [BGR05]. **Two** [WSH+17, Cag80, Sny82]. **two-point** [Sny82]. **two-sided** [Cag80]. **Type** [AMI+21, DLL+17, HKH+22, Heg88b, Heg88a, Sny82].

UCLA [HT91]. **Unconstrained** [HAE21, DLL+17, NK21, RMMF10, Wan23]. **understanding** [CLS24]. **University** [Rus76]. **use** [SW75]. **Using** [CMN18].

V [Dre65, Tab70]. **Value** [WZ14, Sny82]. **Variable** [Hes32b, Hes31, Hes32a, Hes33b]. **Variational** [Gui65b, Hes64, Hes65, Hes69c, Hes54, Hes61b, Hes83, Hes87]. **Variations** [BH35a, BH35c, BH35d, Buk67, Hes33e,

HB33, Hes34d, Hes49, Hes50a, Hes50b, Hes56b, Hes66b, Hes80b, Hes13, Rus76, You68, BH35b, BH32, BH33a, BH33b, Bol01, Hes33a, Hes33d, Hes33c, Hes34b, Hes34c, Hes34e, Hes36c, Hes37, Hes38, Hes39, HR39, HM40, Hes41b, Hes42, Hes46a, Hes46b, Hes46c, Hes48, Hes51a, Hes66a]. **vectors** [HK51b]. **versions** [Zha09].

W [Dre65, Tab70]. **Walking** [SLLT18]. **Weakened** [Gui65b]. **Weierstrass** [HR39, Hes46c]. **Wiley** [Jer77]. **Wisconsin** [Rus76]. **without** [Rai17]. **Wolfe** [JBM21].

xiii [Jer77]. **xxii** [Dea64].

York [Dea64, Jer77]. **Young** [Rus76]. **Yuan** [BKG15, DC05, NK21].

Zadeh [Tab70]. **Zur** [Mae54].

References

Amini:2019:MHS

[AFP19] Keyvan Amini, Parvaneh Faramarzi, and Nasrin Pirfalah. A modified Hestenes–Stiefel conjugate gradient method with an optimal property. *Optimization Methods and Software*, 34(4): 770–782, April 2019. ISSN 1026-7670 (print), 1055-6788 (electronic).

Awwal:2019:PHS

[AKAW19] Aliyu Muhammed Awwal, Poom Kumam, Auwal Bala Abubakar, and Adamu Wakili. A projection Hestenes–Stiefel-like method for monotone nonlinear equations with convex constraints. *Thai Journal of Mathematics*, 17:181–200, 2019. ISSN 1686-0209.

Abubakar:2021:NTT

[AMI+21] Auwal Bala Abubakar, Kanikar Muangchoo, Abdulkarim Hassan Ibrahim, Abubakar Bakoji Muhammad, Lateef Olakunle Jolaoso, and Kazeem Olalekan Aremu. A new three-term Hestenes–Stiefel type method for nonlinear monotone operator equations and image restoration. *IEEE Access*, 9:18262–18277, 2021. ISSN 2169-3536.

Anonymous:1974:CAD

[Ano74] Anonymous. Collection of articles dedicated to Magnus R. Hestenes. *Journal of Optimization Theory and Applications*, 14(5):445–584, November 1974. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic). URL `https://link.springer.com/journal/10957/volumes-and-issues/14-5`. **14** (1974), no. 5.

Anonymous:1991:DMR

[Ano91a] Anonymous. Deaths: Magnus R. Hestenes. *Notices of the American Mathematical Society*, 38(6): 657, July/August 1991. CODEN AMNOAN. ISSN 0002-9920 (print), 1088-9477 (electronic). URL `https://www.ams.org/journals/notices/199107`.

Anonymous:1991:MH

[Ano91b] Anonymous. Magnus Hestenes: 1906–1991. *Notices of the American Mathematical Society*, 38 (7):792, September 1991. CODEN AMNOAN. ISSN 0002-9920

(print), 1088-9477 (electronic). URL `https://www.ams.org/journals/notices/199109`.

Anonymous:19xx:MRH

[Anoxx] Anonymous. Magnus Rudolph Hestenes. Memorial Web site., 19xx. URL `https://www.findagrave.com/memorial/186188943/magnus-rudolph-hestenes`.

Anonymous:2022:NDO

[Ano22] Anonymous. NBS discovers one of the century's top 10 algorithms: Date 1952. NIST Web site, March 14, 2022. URL `https://www.nist.gov/mathematics-statistics/nbs-discovers-one-centurys-top-10-algorithms`. See [DS00].

Awwal:2020:PHS

[AWK+20] Aliyu Muhammed Awwal, Lin Wang, Poom Kumam, Hassan Mohammad, and Wiboonsak Watthayu. A projection Hestenes–Stiefel method with spectral parameter for nonlinear monotone equations and signal processing. *Mathematical & Computational Applications*, 25 (2):Paper No. 27, 29, May 2020. ISSN 1300-686X.

Berkovitz:1991:OMR

[BCH+91] Len Berkovitz, Tony Chan, Alfred Hayes, Dianne O'Leary, and Richard Tapia. Obituary. [Magnus Rudolf Hestenes]. *SIAM News*, 24(5):??, September 1991. ISSN 0036-1437.

Beckenbach:1956:MME

[Bec56] Edwin Ford Beckenbach, editor. *Modern Mathematics for the Engineer: First Series*. University of California Engineering Extension Series. McGraw-Hill, New York, NY, USA, 1956. xxii + 514 pp.

Beckenbach:1962:MME

[Bec62] Edwin Ford Beckenbach, editor. *Modern Mathematics for the Engineer: Second Series*. McGraw-Hill, New York, NY, USA, 1962. xviii + 456 pp. LCCN QA401 .B4. With an introduction by Magnus R. Hestenes.

Beckenbach:2013:MMEa

[Bec13a] Edwin Ford Beckenbach, editor. *Modern Mathematics for the Engineer: First Series*. Dover books on engineering. Dover, New York, NY, USA, 2013. ISBN 0-486-49746-1 (paperback), 0-486-31611-4 (e-book). xx + 514 pp. LCCN QA401 .B4 2013. With an introduction by Royal Weller. Reprint of [Bec56].

Beckenbach:2013:MMEb

[Bec13b] Edwin Ford Beckenbach, editor. *Modern Mathematics for the Engineer: Second Series*. Dover, New York, NY, USA, 2013. ISBN 0-486-31612-2 (e-book), 0-486-49747-X (paperback), 1-306-32668-0 (e-book). xviii + 456 pp. LCCN QA401 .B39 2013. With an introduction by Magnus R. Hestenes. Reprint of [Bec62].

Berkovitz:1992:MMR

[Ber92] Leonard D. Berkovitz. In memory of Magnus R. Hestenes. *Journal of Optimization Theory and Applications*, 73(2):225–227, May 1992. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Bader:1981:QHT

[BF81] Laura Bader and Anna Franchetta. Quasiprimitive Hestenes ternary rings. *Rendiconti di Matematica. Serie VII*, 1(3):411–430, 1981. ISSN 0034-4427.

Bonettini:2004:HMS

[BGR04] S. Bonettini, E. Galligani, and V. Ruggiero. Hestenes method for symmetric indefinite systems in interior-point method. *Rendiconti di matematica e delle sue applicazioni (1981)*, 24(1):185–199, 2004. CODEN RNMTAN. ISSN 1120-7183. URL `https://doaj.org/toc/2532-3350`.

Bonettini:2005:INM

[BGR05] Silvia Bonettini, Emanuele Galligani, and Valeria Ruggiero. An inexact Newton method combined with Hestenes multipliers' scheme for the solution of Karush–Kuhn–Tucker systems. *Applied Mathematics and Computation*, 168(1):651–676, September 1, 2005. CODEN AMHCBQ. ISSN 0096-3003 (print), 1873-5649 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0096300304006307`.

Bliss:1932:SCP

[BH32] G. A. Bliss and M. R. Hestenes. Sufficient conditions for a problem of Mayer in the calculus of variations. *Bulletin of the American Mathematical Society*, 38(5):347–348, May 1932. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1932-38-05/S0002-9904-1932-05405-2/S0002-9904-1932-05405-2.pdf`.

Bliss:1933:NPB

[BH33a] G. A. Bliss and M. R. Hestenes. A note on the problem of Bolza in the calculus of variations. *Bulletin of the American Mathematical Society*, 39(5):341, May 1933. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1933-39-05/S0002-9904-1933-05620-3/S0002-9904-1933-05620-3.pdf`.

Bliss:1933:SCP

[BH33b] G. A. Bliss and M. R. Hestenes. Sufficient conditions for a problem of Mayer in the calculus of variations. In *Contributions to the Calculus of Variations 1931–1932* [Hes33e], pages 295–337.

Birkhoff:1935:GMPa

[BH35a] G. D. Birkhoff and M. R. Hestenes. Generalized minimax principle in the calculus of variations. *Proceedings of the National Academy of Sciences of the United States of America*, 21

(2):96–99, February 1935. CODEN PNASA6. ISSN 0027-8424 (print), 1091-6490 (electronic).

Birkhoff:1935:GMPb

[BH35b] G. D. Birkhoff and M. R. Hestenes. Generalized minimax principle in the calculus of variations. *Duke Mathematical Journal*, 1(4):413–432, December 1935. CODEN DUMJAO. ISSN 0012-7094 (print), 1547-7398 (electronic).

Birkhoff:1935:NICa

[BH35c] G. D. Birkhoff and M. R. Hestenes. Natural isoperimetric conditions in the calculus of variations. *Proceedings of the National Academy of Sciences of the United States of America*, 21 (2):99–102, February 1935. CODEN PNASA6. ISSN 0027-8424 (print), 1091-6490 (electronic).

Birkhoff:1935:NICb

[BH35d] G. D. Birkhoff and M. R. Hestenes. Natural isoperimetric conditions in the calculus of variations. *Duke Mathematical Journal*, 1(2), June 1935. CODEN DUMJAO. ISSN 0012-7094 (print), 1547-7398 (electronic).

Ben-Israel:1964:DSD

[BI64] Adi Ben-Israel. On direct sum decompositions of Hestenes algebras. *Israel Journal of Mathematics*, 2:50–54, March 1964. CODEN ISJMAP. ISSN 0021-2172 (print), 1565-8511 (electronic).

Babaie-Kafaki:2015:HHS

[BKG15] Saman Babaie-Kafaki and Reza Ghanbari. A hybridization of the Hestenes–Stiefel and Dai–Yuan conjugate gradient methods based on a least-squares approach. *Optimization Methods and Software*, 30(4):673–681, October 2015. ISSN 1026-7670 (print), 1055-6788 (electronic).

Babaie-Kafaki:2017:EHS

[BKG17] S. Babaie-Kafaki and R. Ghanbari. Extensions of the Hestenes–Stiefel and Polak–Ribière–Polyak conjugate gradient methods with sufficient descent property. *Bulletin of the Iranian Mathematical Society*, 43(7):2437–2448, 2017. ISSN 1017-060X. URL `https://www.springer.com/journal/41980`.

Babaie-Kafaki:2018:LHH

[BKG18] Saman Babaie-Kafaki and Reza Ghanbari. A linear hybridization of the Hestenes–Stiefel method and the memoryless BFGS technique. *Mediterranean Journal of Mathematics*, 15(3):Paper No. 86, 10, April 2018. ISSN 1660-5446 (print), 1660-5454 (electronic).

Bolza:1901:NPT

[Bol01] Oskar Bolza. New proof of a theorem of Osgood's in the calculus of variations. *Transactions of the American Mathematical Society*, 2(4):422–427, October 1901. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

URL `https://en.wikipedia.org/wiki/Oskar_Bolza`.

Bartolozzi:1977:ATH

[BP77] Federico Bartolozzi and Gianfranco Panella. Anelli ternari di Hestenes semplici, artiniani e privi di ideali bilateri effettivi. *Ricerche di Matematica (Napoli)*, 26(2):255–275, 1977. CODEN RCMTAE. ISSN 0035-5038 (print), 1827-3491 (electronic).

Baluch:2018:NMT

[BSA18] Bakhtawar Baluch, Zabidin Salleh, and Ahmad Alhawarat. A new modified three-term Hestenes–Stiefel conjugate gradient method with sufficient descent property and its global convergence. *Journal of Optimization*, 2018:Art. ID 5057096, 13, September 2018. ISSN 2314-6486 (print), 2356-752X (electronic).

Bukovices:1967:BRM

[Buk67] E. Bukovices. Book report: M. R. Hestenes, Calculus of Variations and Optimal Control Theory. *Computing: Archiv für Informatik und Numerik*, 2(4): 374, December 1967. CODEN CMPTA2. ISSN 0010-485X (print), 1436-5057 (electronic).

Caggegi:1980:SHT

[Cag80] Andrea Caggegi. Simple Hestenes ternary rings, right Artinian and with no effective two-sided ideals. *Rendiconti di Matematica. Serie VI.*, 13(1):85–103, 1980. ISSN 0034-4427.

Caggegi:1981:PHT

[Cag81] Andrea Caggegi. Primitive Hestenes ternary rings with minimal right ideal. *Annali di matematica pura ed applicata. Series 4*, 128(1):169–191, December 1981. CODEN ANLMAE. ISSN 0003-4622.

Chernov:1997:HFD

[CC97] A. V. Chernov and V. M. Chernov. On Hestenes' formalization for describing linear image transforms. *Lecture Notes in Computer Science*, 1315:164–175, 1997. CODEN LNCSD9. ISSN 0302-9743 (print), 1611-3349 (electronic).

Chan:1991:MH

[Cha91] Tony Chan. Magnus Hestenes. Netlib Web site., June 4, 1991. URL `https://www.netlib.org/na-digest-html/91/v91n24.html#2`.

Carson:2024:TUC

[CLS24] Erin Carson, Jörg Liesen, and Zdeněk Strakoš. Towards understanding CG and GMRES through examples. *Linear Algebra and its Applications*, 692 (??):241–291, July 1, 2024. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0024379524001381`.

Cuomo:2018:PIH

[CMN18] Salvatore Cuomo, Livia Marcellino, and Guglielmo Navarra. A parallel implementation of

the Hestenes–Jacobi-one-sides method using GPU-CUDA. In *2018 26th Euromicro International Conference on Parallel, Distributed and Network-based Processing (PDP)*, pages 722–725. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2018.

Crane:1987:HAC

[Cra87] G. E. Crane, editor. *HSNC'87: ACM Conference on the History of Scientific and Numeric Computation, conference proceedings: papers presented at the Conference, Princeton, New Jersey, May 13-15, 1987*. ACM Press, New York, NY 10036, USA, October 1987. ISBN 0-89791-229-2. LCCN QA76 .A25 1987.

Cullum:1977:BRO

[Cul77] Jane Cullum. Book review: *Optimization Theory; The Finite Dimensional Case* (Magnus R. Hestenes). *SIAM Review*, 19(4): 750–752, October 1977. CODEN SIREAD. ISSN 0036-1445 (print), 1095-7200 (electronic).

Dai:2005:MHS

[DC05] Zhi Feng Dai and Lan Ping Chen. A mixed Hestenes–Stiefel Dan–Yuan conjugate gradient method. *Mathematica Numerica Sinica. Jisuan Shuxue*, 27(4):429–436, 2005. ISSN 0254-7791.

Deal:1964:BRM

[Dea64] Roy B. Deal. Book review: *Modern Mathematics for the Engineer*, Edited by Edwin F. Beckenbach. New York, McGraw-Hill, 1956. xxii + 514 pp. *Pi Mu Epsilon Journal*, 4(1):22, Fall 1964. CODEN PMEJBR. ISSN 0031-952X. URL `https://www.jstor.org/stable/24339253`.

Dong:2017:SNT

[DHG+17] Xiao-Liang Dong, De-Ren Han, Reza Ghanbari, Xiang-Li Li, and Zhi-Feng Dai. Some new three-term Hestenes–Stiefel conjugate gradient methods with affine combination. *Optimization*, 66 (5):759–776, February 2017. CODEN OPTZDQ. ISSN 0233-1934, 0323-3898.

Dong:2015:MHS

[DLHY15] Xiao Liang Dong, Hong Wei Liu, Yu Bo He, and Xi Mei Yang. A modified Hestenes–Stiefel conjugate gradient method with sufficient descent condition and conjugacy condition. *Journal of Computational and Applied Mathematics*, 281(??): 239–249, June 2015. CODEN JCAMDI. ISSN 0377-0427 (print), 1879-1778 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0377042714005378`.

Dong:2017:MNH

[DLL+17] Xiao-Liang Dong, Hong-Wei Liu, Xiang-Li Li, Yu-Bo He, and Ze-Xian Liu. A modified non-monotone Hestenes–Stiefel type conjugate gradient methods for large-scale unconstrained problems. *Numerical Functional*

Analysis and Optimization, 38 (1):39–50, September 2017. CODEN NFAODL. ISSN 0163-0563 (print), 1532-2467 (electronic).

Dong:2019:EAT

[DLLL19] Xiao-Liang Dong, Ze-Xian Liu, Hong-Wei Liu, and Xiang-Li Li. An efficient adaptive three-term extension of the Hestenes–Stiefel conjugate gradient method. *Optimization Methods and Software*, 34(3):546–559, October 2019. ISSN 1026-7670 (print), 1055-6788 (electronic).

Dreyfus:1965:BRC

[Dre65] S. E. Dreyfus. Book review: *Computing methods in optimization problems*, A. V. Balakrishnan and Lucien W. Neustadt. *Quarterly of Applied Mathematics*, 23(3):264, 1965. CODEN QAMAAY. ISSN 0033-569X (print), 1552-4485 (electronic). URL `http://www.jstor.org/stable/43635529`.

Dongarra:2000:GEI

[DS00] Jack Dongarra and Francis Sullivan. Guest Editors' introduction: The top 10 algorithms. *Computing in Science and Engineering*, 2(1):22–23, January/February 2000. CODEN CSENFA. ISSN 1521-9615 (print), 1558-366X (electronic). URL `http://dlib.computer.org/cs/books/cs2000/pdf/c1022.pdf; http://www.computer.org/cse/cs1999/c1022abs.htm`. See correspondence [**?**].

Durazzi:1999:NSD

[Dur99] Carla Durazzi. Numerical solution of discrete quadratic optimal control problems by Hestenes' method. *Rendiconti del Circolo Matematico di Palermo. Serie II. Supplemento*, 58:133–154, 1999. ISSN 1592-9531. Proceedings of the Workshop "Numerical Methods in Optimization" (Cortona, 1997)".

Dai:2012:GCM

[DW12] Zhifeng Dai and Fenghua Wen. Global convergence of a modified Hestenes–Stiefel nonlinear conjugate gradient method with Armijo line search. *Numerical Algorithms*, 59(1):79–93, January 2012. CODEN NUALEG. ISSN 1017-1398 (print), 1572-9265 (electronic). URL `http://www.springerlink.com/openurl.asp?genre=article&issn=1017-1398&volume=59&issue=1&spage=79`.

Faramarzi:2021:STT

[FA21] Parvaneh Faramarzi and Keyvan Amini. A spectral three-term Hestenes–Stiefel conjugate gradient method. *4OR*, 19(1):71–92, February 2021. ISSN 1614-2411 (print), 1619-4500 (electronic).

Forsythe:1951:IMS

[FHR51] George E. Forsythe, Magnus R. Hestenes, and J. Barkley Rosser. Iterative methods for solving linear equations. *Bulletin of the American Mathematical Society*, 57(6):480, November 1951. CODEN BAMOAD. ISSN 0002-

9904 (print), 1936-881X (electronic). URL https://www.ams.org/journals/bull/1951-57-06/.

Fox:1948:NSA

[FHW48] L. Fox, H. D. Huskey, and J. H. Wilkinson. Notes on the solution of algebraic linear simultaneous equations. *Quarterly Journal of Mechanics and Applied Mathematics*, 1:149–173, 1948. CODEN QJMMAV. ISSN 0033-5614 (print), 1464-3855 (electronic).

Fortin:1975:MSN

[For75] Michel Fortin. Minimization of some non-differentiable functionals by the augmented Lagrangian method of Hestenes and Powell. *Applied Mathematics and Optimization*, 2(3):236–250, September 1975. CODEN AMOMBN. ISSN 0095-4616 (print), 1432-0606 (electronic).

Friedman:1973:RTM

[Fri73] Kenneth Friedman. Replies to Tribus and Motroni and to Gage and Hestenes. *Journal of Statistical Physics*, 9 (3):265–269, November 1973. CODEN JSTPSB. ISSN 0022-4715 (print), 1572-9613 (electronic). URL http://link.springer.com/article/10.1007/BF01008732.

Ferrarotti:1998:GHLa

[FW98a] Massimo Ferrarotti and Leslie C. Wilson. Generalized Hestenes lemma and extension of functions. In *Geometry Seminars, 1996–1997 (Italian) (Bologna)*, pages 99–109. Università degli Studi di Bologna, Dipartimento di Matematica, Bologna, Italy, 1998.

Ferrarotti:1998:GHLb

[FW98b] Massimo Ferrarotti and Leslie C. Wilson. Generalized Hestenes' lemma and extension of functions. *Transactions of the American Mathematical Society*, 350 (5):1957–1975, May 1998. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Ferrarotti:2008:RGH

[FW08] Massimo Ferrarotti and Leslie C. Wilson. Remarks on the generalized Hestenes's lemma. *Rocky Mountain Journal of Mathematics*, 38(2):461–469, April 2008. CODEN RMJMAE. ISSN 0035-7596 (print), 1945-3795 (electronic).

Golub:1989:SHC

[GO89] Gene H. Golub and Dianne P. O'Leary. Some history of the conjugate gradient and Lanczos algorithms: 1948–1976. *SIAM Review*, 31(1):50–102, March 1989. CODEN SIREAD. ISSN 0036-1445 (print), 1095-7200 (electronic). URL http://www.jstor.org/stable/2030847.

Guinn:1965:PBS

[Gui65a] T. Guinn. The problem of bounded space coordinates as a problem of Hestenes. *Journal of the Society for Industrial and Applied Mathematics. Series A,*

On control, 3(2):181–190, January 1965. CODEN JSMCAL. ISSN 0887-4603 (print), 2168-359X (electronic).

Guinn:1965:WHV

[Gui65b] T. Guinn. Weakened hypotheses for the variational problem considered by Hestenes. *Journal of the Society for Industrial and Applied Mathematics. Series A, On control*, 3(3):418–423, January 1965. CODEN JSMCAL. ISSN 0887-4603 (print), 2168-359X (electronic).

Guo:1995:GCH

[GXS95] Wen Ying Guo, Da Chuan Xu, and Gui Cheng Shen. Global convergence of the Hestenes–Stiefel conjugate gradient method. *Kexue Tongbao (Chinese)*, 40 (23):2113–2117, 1995. ISSN 0023-074X (print), 2095-9419 (electronic).

Halil:2021:MHS

[HAE21] Isam H. Halil, Khalil K. Abbo, and Hassan H. Ebrahim. Modifications of Hestenes and Stiefel CG method for solving unconstrained optimization problems. In *2021 7th International Conference on Contemporary Information Technology and Mathematics (ICCITM)*, pages 274–278. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2021.

Hansen:1988:RNS

[Han88] P. C. Hansen. Reducing the number of sweeps in Hestenes method. In E. F. Deprettere, editor, *Singular Value Decomposition and Signal Processing*. North-Holland Publishing Co., Amsterdam, The Netherlands, 1988.

Hestenes:1933:SCPa

[HB33] M. R. Hestenes and G. A. Bliss. Sufficient conditions for a problem of Mayer in the calculus of variations. *Transactions of the American Mathematical Society*, 35(1):305–326, January 1933. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hegedus:1987:GRHb

[Heg88a] Cs. J. Hegedűs. General recursions of Hestenes–Stiefel type for conjugate directions. II. The reverse recursion. *Alkalmazott Matematikai Lapok*, 13(3–4):361–372, 1987/88. ISSN 0133-3399.

Hegedus:1987:GRHa

[Heg88b] Csaba J. Hegedűs. General recursions of Hestenes–Stiefel type for conjugate directions. I. The direct recursion. *Alkalmazott Matematikai Lapok*, 13(1–2):83–96, 1987/88. ISSN 0133-3399.

Hestenes:1928:PRS

[Hes28] Magnus Rudolph Hestenes. Path of a rotating sphere. M.A. thesis, University of Wisconsin-Madison, Madison, WI, USA, 1928. 160 pp. URL `https://books.google.com/books?id=P242AAAAMAAJ`.

Hestenes:1931:SCG

[Hes31] M. R. Hestenes. Sufficient conditions for the general problem of Mayer with variable endpoints. In *Contributions to the Calculus of Variations 1931–1932* [Hes33e], pages 339–359.

Hestenes:1932:SCP

[Hes32a] M. R. Hestenes. Sufficient conditions for a problem of Mayer with variable endpoints. *Bulletin of the American Mathematical Society*, 38(5):348, May 1932. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1932-38-05/S0002-9904-1932-05405-2/S0002-9904-1932-05405-2.pdf`.

Hestenes:1932:SCG

[Hes32b] Magnus Rudolf Hestenes. *Sufficient Conditions for the General Problem of Mayer with Variable End-Points*. Ph.D. dissertation, Department of Mathematics, University of Chicago, Chicago, IL, USA, June 1932. iii + 19 pp. URL `http://pi.lib.uchicago.edu/1001/cat/bib/4527495; https://www.proquest.com/pqdtglobal/docview/301826467/`.

Hestenes:1933:NJC

[Hes33a] M. R. Hestenes. A note on the Jacobi condition for parametric problems in the calculus of variations. *Bulletin of the American Mathematical Society*, 39(7):509, July 1933. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1933-39-07/S0002-9904-1933-05674-4/S0002-9904-1933-05674-4.pdf`.

Hestenes:1933:SCG

[Hes33b] M. R. Hestenes. Sufficient conditions for the general problem of Mayer with variable end points. *Transactions of the American Mathematical Society*, 35(2):479–490, April 1933. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hestenes:1933:SCPc

[Hes33c] M. R. Hestenes. Sufficient conditions for the problem of Bolza in the calculus of variations. *Bulletin of the American Mathematical Society*, 39(7):506, July 1933. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1933-39-07/S0002-9904-1933-05674-4/S0002-9904-1933-05674-4.pdf`.

Hestenes:1933:SCPb

[Hes33d] M. R. Hestenes. Sufficient conditions for the problem of Lagrange in the calculus of variations. *Bulletin of the American Mathematical Society*, 39(5):341, May 1933. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1933-39-05/S0002-9904-1933-05620-3/S0002-9904-1933-05620-3.pdf`.

Hestenes:1933:CCV

[Hes33e] Magnus R. Hestenes. *Contributions to the Calculus of Variations 1931–1932*. University of Chicago Press, Chicago, IL, USA, 1933. vii + 523 pp.

Hestenes:1934:BTP

[Hes34a] M. R. Hestenes. A basis theorem in the problems of Lagrange and Bolza. *Bulletin of the American Mathematical Society*, 40(11):802–803, November 1934. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1934-40-11/S0002-9904-1934-05986-X/S0002-9904-1934-05986-X.pdf`.

Hestenes:1934:NJC

[Hes34b] M. R. Hestenes. A note on the Jacobi condition for parametric problems in the calculus of variations. *Bulletin of the American Mathematical Society*, 40 (4):297–302, April 1934. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1934-40-04/S0002-9904-1934-05855-5/` ; `https://www.ams.org/journals/bull/1934-40-04/S0002-9904-1934-05855-5/S0002-9904-1934-05855-5.pdf`.

Hestenes:1934:PBC

[Hes34c] M. R. Hestenes. The problem of Bolza in the calculus of variations in parametric form. *Bulletin of the American Mathematical Society*, 40(9):657, September 1934. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1934-40-09/S0002-9904-1934-05918-4/S0002-9904-1934-05918-4.pdf`.

Hestenes:1934:SCPa

[Hes34d] M. R. Hestenes. Sufficient conditions for the problem of Bolza in the calculus of variations. *Transactions of the American Mathematical Society*, 36(4):793–818, October 1934. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hestenes:1934:SCPb

[Hes34e] M. R. Hestenes. Sufficient conditions for the problem of Bolza in the calculus of variations. II. *Bulletin of the American Mathematical Society*, 40 (3):220, March 1934. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1934-40-03/S0002-9904-1934-05818-X/S0002-9904-1934-05818-X.pdf`.

Hestenes:1936:MPF

[Hes36a] M. R. Hestenes. Minimax principle for functions. *Proceedings of the National Academy of Sciences of the United States of America*, 22(2):115–119, February 1936. CODEN PNASA6. ISSN 0027-8424 (print), 1091-6490 (electronic). URL `https://www.pnas.org/doi/10.1073/pnas.22.2.115`.

Hestenes:1936:SCP

[Hes36b] Magnus R. Hestenes. On sufficient conditions in the problems of Lagrange and Bolza. *Annals of Mathematics (2)*, 37(3):543–551, July 1936. CODEN ANMAAH. ISSN 0003-486x (print), 1939-8980 (electronic).

Hestenes:1936:PBC

[Hes36c] Magnus R. Hestenes. The problem of Bolza in the calculus of variations in parametric form. *American Journal of Mathematics*, 58(2):391–406, April 1936. CODEN AJMAAN. ISSN 0002-9327 (print), 1080-6377 (electronic).

Hestenes:1937:DSP

[Hes37] Magnus R. Hestenes. A direct sufficiency proof for the problem of Bolza in the calculus of variations. *Transactions of the American Mathematical Society*, 42(1):141–154, July 1937. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hestenes:1938:SPI

[Hes38] M. H. Hestenes. A sufficiency proof for isoperimetric problems in the calculus of variations. *Bulletin of the American Mathematical Society*, 44(10):662–667, October 1938. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881X (electronic). URL `https://www.ams.org/journals/bull/1938-44-10/S0002-9904-1938-06838-3/`.

Hestenes:1939:GPB

[Hes39] M. R. Hestenes. Generalized problem of Bolza in the calculus of variations. *Duke Mathematical Journal*, 5(2):309–324, June 1939. CODEN DUMJAO. ISSN 0012-7094 (print), 1547-7398 (electronic).

Hestenes:1941:ERD

[Hes41a] M. R. Hestenes. Extension of the range of a differentiable function. *Duke Mathematical Journal*, 8 (1):183–192, March 1941. CODEN DUMJAO. ISSN 0012-7094 (print), 1547-7398 (electronic).

Hestenes:1941:AGT

[Hes41b] Magnus R. Hestenes. An analogue of Green's theorem in the calculus of variations. *Duke Mathematical Journal*, 8(2):300–311, June 1941. CODEN DUMJAO. ISSN 0012-7094 (print), 1547-7398 (electronic).

Hestenes:1942:PBC

[Hes42] M. R. Hestenes. The problem of Bolza in the calculus of variations. *Bulletin of the American Mathematical Society*, 48 (2):57–75, February 1942. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic). URL `https://www.ams.org/journals/bull/1942-48-02/S0002-9904-1942-07600-2/S0002-9904-1942-07600-2.pdf`.

Hestenes:1945:TCP

[Hes45] Magnus R. Hestenes. A theory of critical points. *American Jour-*

nal of Mathematics, 67(4):521–562, October 1945. CODEN AJMAAN. ISSN 0002-9327 (print), 1080-6377 (electronic).

Hestenes:1946:SCI

[Hes46a] Magnus R. Hestenes. Sufficient conditions for the isoperimetric problem of Bolza in the calculus of variations. *Transactions of the American Mathematical Society*, 60(1):93–118, July 1946. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hestenes:1946:TLC

[Hes46b] Magnus R. Hestenes. Theorem of Lindeberg in the calculus of variations. *Transactions of the American Mathematical Society*, 60(1): 72–92, July 1946. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hestenes:1946:WFC

[Hes46c] Magnus R. Hestenes. The Weierstrass E-function in the calculus of variations. *Transactions of the American Mathematical Society*, 60(1):51–71, July 1946. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hestenes:1947:ASP

[Hes47a] Magnus R. Hestenes. An alternate sufficiency proof for the normal problem of Bolza. *Transactions of the American Mathematical Society*, 61(2):256–264, March 1947. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hestenes:1947:ISP

[Hes47b] Magnus R. Hestenes. An indirect sufficiency proof for the problem of Bolza in nonparametric form. *Transactions of the American Mathematical Society*, 62(3): 509–535, November 1947. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hestenes:1948:SCM

[Hes48] Magnus R. Hestenes. Sufficient conditions for multiple integral problems in the calculus of variations. *American Journal of Mathematics*, 70(2):239–276, April 1948. CODEN AJMAAN. ISSN 0002-9327 (print), 1080-6377 (electronic).

Hestenes:1949:NMO

[Hes49] Magnus Rudolph Hestenes. Numerical methods of obtaining solutions of fixed endpoint problems in the calculus of variations. Research Memorandum RM-0102-PR, The RAND Corporation, Santa Monica, CA, USA, 1949. 17 pp. URL `https://www.rand.org/pubs/research_memoranda/RM0102.html`.

Hestenes:1950:EIC

[Hes50a] Magnus R. Hestenes. An elementary introduction to the calculus of variations. *Mathematics Magazine*, 23(5):249–267, May/June 1950. CODEN MAMGA8. ISSN 0025-570X (print), 1930-0980 (electronic). URL `https://www.jstor.org/stable/pdf/3028990.pdf`.

Hestenes:1950:GPC

[Hes50b] Magnus Rudolph Hestenes. A general problem in the calculus of variations with applications to the paths of least time. Research Memorandum RM-100, The RAND Corporation, Santa Monica, CA, USA, March 1, 1950. i + 45 pp. URL `https://www.rand.org/pubs/research_memoranda/RM100.html`.

Hestenes:1951:ATQ

[Hes51a] Magnus R. Hestenes. Applications of the theory of quadratic forms in Hilbert space to the calculus of variations. *Pacific Journal of Mathematics*, 1(4): 525–581, December 1951. CODEN PJMAAI. ISSN 0030-8730 (print), 1945-5844 (electronic). URL `http://projecteuclid.org/euclid.pjm/1103052021`. Entry [Mie74] says this is perhaps Hestenes's best known paper, although the conjugate gradient paper [HS52] is also highly cited.

Hestenes:1951:IMS

[Hes51b] Magnus R. Hestenes. Iterative methods for solving linear equations. NAML Report 52-9, National Bureau of Standards, Los Angeles, CA, USA, July 2, 1951.

Hestenes:1953:DEE

[Hes53] Magnus R. Hestenes. Determination of eigenvalues and eigenvectors of matrices. In Paige and Taussky [PT53], pages 89–94. LCCN QA3 .U5 no. 29.

Hestenes:1954:HSM

[Hes54] Magnus R. Hestenes. Hilbert space methods in variational theory and numerical analysis. In J. Gerretsen and J. De Groot, editors, *Proceedings of the International Congress of Mathematicians 1954. Amsterdam, September 2–9. Vol. III. Stated addresses in sections. Symposia*, volume 3, pages 229–236. North-Holland Publishing Co., Amsterdam, The Netherlands, 1954.

Hestenes:1955:ICM

[Hes55] Magnus R. Hestenes. Iterative computational methods. *Communications on Pure and Applied Mathematics (New York)*, 8(1): 85–96, February 1955. CODEN CPAMAT, CPMAMV. ISSN 0010-3640 (print), 1097-0312 (electronic).

Hestenes:1956:CGM

[Hes56a] Magnus R. Hestenes. The conjugate gradient method for solving linear systems. In *Proceedings of Symposia in Applied Mathematics. Vol. VI, Numerical analysis*, pages 83–102. McGraw-Hill, New York, NY, USA, 1956.

Hestenes:1956:ECV

[Hes56b] Magnus R. Hestenes. Elements of the calculus of variations. In Beckenbach [Bec56], chapter 4, page ??

Hestenes:1958:IMB

[Hes58] Magnus R. Hestenes. Inversion of matrices by biorthogonaliza-

tion and related results. *Journal of the Society for Industrial and Applied Mathematics*, 6(1): 51–90, March 1958. CODEN JSIMAV. ISSN 0368-4245 (print), 1095-712X (electronic).

Hestenes:1961:RHM

[Hes61a] M. R. Hestenes. Relative Hermitian matrices. *Pacific Journal of Mathematics*, 11(1):225–245, March 1961. CODEN PJMAAI. ISSN 0030-8730 (print), 1945-5844 (electronic).

Hestenes:1961:QVT

[Hes61b] Magnus R. Hestenes. Quadratic variational theory and linear elliptic partial differential equations. *Transactions of the American Mathematical Society*, 101 (2):306–350, November 1961. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hestenes:1961:RSA

[Hes61c] Magnus R. Hestenes. Relative self-adjoint operators in Hilbert space. *Pacific Journal of Mathematics*, 11(4):1315–1357, December 1961. CODEN PJMAAI. ISSN 0030-8730 (print), 1945-5844 (electronic). URL `http://projecteuclid.org/euclid.pjm/1103036917`.

Hestenes:1962:I

[Hes62a] Magnus R. Hestenes. Introduction. In Beckenbach [Bec62], page ???? LCCN QA401 .B4. With an introduction by Magnus R. Hestenes.

Hestenes:2013:I

[Hes62b] Magnus R. Hestenes. Introduction. In Beckenbach [Bec13b], page ???? ISBN 0-486-31612-2 (e-book), 0-486-49747-X (paperback), 1-306-32668-0 (e-book). LCCN QA401 .B39 2013. With an introduction by Magnus R. Hestenes. Reprint of [Bec62].

Hestenes:1962:TAA

[Hes62c] Magnus R. Hestenes. A ternary algebra with applications to matrices and linear transformations. *Archive for Rational Mechanics and Analysis*, 11(1):138–195, January 1962. CODEN AVRMAW. ISSN 0003-9527 (print), 1432-0673 (electronic). URL `https://link.springer.com/article/10.1007/BF00253936`.

Hestenes:1964:VTO

[Hes64] Magnus R. Hestenes. Variational theory and optimal control theory. In A. V. Balakrishnan and Lucien W. Neustadt, editors, *Computational Methods in Optimization Problems, Proceedings of a conference held at University of California, Los Angeles, January 30–31, 1964*, pages 1–22. Academic Press, New York, USA, 1964.

Hestenes:1965:VTO

[Hes65] Magnus R. Hestenes. On variational theory and optimal control theory. *Journal of the Society for Industrial and Applied Mathematics. Series A, On control*, 3 (1):23–48, January 1965. CO-

DEN JSMCAL. ISSN 0887-4603 (print), 2168-359X (electronic).

Hestenes:1966:ECV

[Hes66a] M. R. Hestenes. Elements of calculus of variations and optimum control theory. In J. Barkley Rosser, editor, *Lectures in Applied Mathematics VI, Space Mathematics. Part 2, Proceedings of the Summer Seminar, Ithaca, New York, 1963*, volume 6 of *Lectures in Applied Mathematics*, pages 212–254. American Mathematical Society, Providence, RI, USA, 1966.

Hestenes:1966:CVO

[Hes66b] Magnus R. Hestenes. *Calculus of Variations and Optimal Control Theory*. Wiley, New York, NY, USA, 1966. ISBN 0-471-37470-9. xii + 405 pp.

Hestenes:1968:PQF

[Hes68] Magnus R. Hestenes. Pairs of quadratic forms. *Linear Algebra and its Applications*, 1 (3):397–407, July 1968. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic). URL `http://www.sciencedirect.com/science/article/pii/0024379568900165`.

Hestenes:1969:MGMa

[Hes69a] M. R. Hestenes. Multiplier and gradient methods. In Zadeh et al. [ZNB69], pages 143–163. LCCN QA402.5 .I5 1968.

Hestenes:1969:MGMb

[Hes69b] Magnus R. Hestenes. Multiplier and gradient methods. *Journal of Optimization Theory and Applications*, 4(5):303–320, November 1969. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Hestenes:1969:VTO

[Hes69c] Magnus R. Hestenes. Variational theory and optimal control theory. In Zadeh et al. [ZNB69], page ?? LCCN QA402.5 .I5 1968.

Hestenes:1973:IMS

[Hes73a] M. R. Hestenes. Iterative methods for solving linear equations. *Journal of Optimization Theory and Applications*, 11(4):323–334, April 1973. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Hestenes:1973:TA

[Hes73b] Magnus R. Hestenes. On a ternary algebra. *Scripta Mathematica*, 29(3–4):253–272, 1973. ISSN 0036-9713.

Hestenes:1975:QCP

[Hes75a] M. R. Hestenes. Quadratic control problems. *Journal of Optimization Theory and Applications*, 17(1–2):1–42, October 1975. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Hestenes:1975:OTF

[Hes75b] Magnus R. Hestenes. *Optimization Theory: The Finite Dimensional Case*. Wiley, New York,

NY, USA, 1975. ISBN 0-471-37471-7 (hardcover). xiii + 447 pp. LCCN QA402.5 .H47.

Hestenes:1975:PCG

[Hes75c] Magnus R. Hestenes. Pseudoinverses and conjugate gradients. *Communications of the ACM*, 18 (1):40–43, January 1975. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317 (electronic). Collection of articles honoring Alston S. Householder.

Hestenes:1976:QCP

[Hes76a] Magnus R. Hestenes. On quadratic control problems. In Russell [Rus76], pages 289–304. ISBN 0-12-604150-4. LCCN QA3 .U45 no. 36 QA315; QA402.3. Publication number 36.

Hestenes:1976:RPA

[Hes76b] Magnus R. Hestenes. A role of the pseudoinverse in analysis. In M. Zuhair Nashed, editor, *Generalized Inverses and Applications. Proceedings of an Advanced Seminar sponsored by the Mathematics Research Center at the University of Wisconsin, Madison, Wisconsin, October 8–10, 1973*, pages 175–192. Academic Press, New York, USA, 1976. Publication number 32.

Hestenes:1978:CDM

[Hes78a] Magnus R. Hestenes. Conjugate direction methods in optimization. In J. Stoer, editor, *Optimization Techniques. Part 1. Proceedings of the 8th IFIP Conference on Optimization Techniques held in Würzburg, September 5–9, 1977*, volume 6 of *Lecture Notes in Control and Information Sciences*, pages 8–27. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1978. ISBN 3-540-08707-9.

Hestenes:1978:SOP

[Hes78b] Magnus R. Hestenes. Solving optimization problems. In A. B. Schwarzkopf, Walter G. Kelley, and Stanley B. Eliason, editors, *Optimal Control and Differential Equations. Proceedings of the Conference on Optimal Control and Differential Equations held at the University of Oklahoma, Norman, Oklahoma, March 24–27, 1977*, pages 165–185. Academic Press, New York, USA, 1978. ISBN 0-12-632250-3.

Hestenes:1980:AOT

[Hes80a] M. R. Hestenes. Augmentability in optimization theory. *Journal of Optimization Theory and Applications*, 32(4):427–440, December 1980. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Hestenes:1980:CVO

[Hes80b] Magnus R. Hestenes. *Calculus of Variations and Optimal Control Theory.* Applied Mathematics Series. Robert E. Krieger Publishing Company, Huntington, NY, USA, 1980. ISBN 0-471-37470-9. xii + 405 pp. Reprint of [Hes66b], with corrections.

Hestenes:1980:CDM

[Hes80c] Magnus R. Hestenes. *Conjugate Direction Methods in Optimization*, volume 12 of *Applications of Mathematics*. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1980. ISBN 0-387-90455-7 (New York), 3-540-90455-7 (Berlin). ISSN 0172-4568. x + 325 pp.

Hestenes:1983:SQV

[Hes83] M. R. Hestenes. Singular quadratic variational problems. *Journal of Optimization Theory and Applications*, 41(1):123–137, September 1983. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Hestenes:1987:CGV

[Hes87] M. R. Hestenes. Conjugacy and gradients in variational theory and analysis. In Crane [Cra87], pages 71–90. ISBN 0-89791-229-2. LCCN QA76 .A25 1987.

Hestenes:1990:CG

[Hes90] Magnus R. Hestenes. Conjugacy and gradients. In Nash [Nas90], pages 167–179. ISBN 0-201-50814-1. LCCN QA76.17 .H59 1990.

Hestenes:2013:ECV

[Hes13] Magnus R. Hestenes. Elements of the calculus of variations. In Beckenbach [Bec13a], chapter 4, page ?? ISBN 0-486-49746-1 (paperback), 0-486-31611-4 (e-book). LCCN QA401 .B4 2013. With an introduction by Royal Weller. Reprint of [Bec56].

Hestenes:1968:ETD

[HG68] M. R. Hestenes and T. Guinn. An embedding theorem for differential equations. *Journal of Optimization Theory and Applications*, 2(2):87–101, March 1968. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Hestenes:1951:S

[HK51a] M. R. Hestenes and W. Karush. Solutions of $Ax = \lambda Bx$. *Journal of Research of the National Bureau of Standards (1934)*, 47(6): 471–478, December 1951. ISSN 0091-0635. Research paper 2275.

Hestenes:1951:MGC

[HK51b] Magnus R. Hestenes and William Karush. A method of gradients for the calculation of the characteristic roots and vectors of a real symmetric matrix. *Journal of Research of the National Bureau of Standards (1934)*, 47(1): 45–61, July 1951. ISSN 0091-0635.

HassanIbrahim:2022:DFT

[HKH+22] Abdulkarim Hassan Ibrahim, Poom Kumam, Basim A. Hassan, Auwal Bala Abubakar, and Jamilu Abubakar. A derivative-free three-term Hestenes–Stiefel type method for constrained nonlinear equations and image restoration. *International Journal of Computer Mathematics*, 99 (5):1041–1065, July 2022. CODEN IJCMAT. ISSN 0020-7160.

Hestenes:1940:TQF

[HM40] M. R. Hestenes and E. J. McShane. A theorem on quadratic forms and its application in the calculus of variations. *Transactions of the American Mathematical Society*, 47(3):501–512, May 1940. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Hestenes:1939:NWC

[HR39] M. R. Hestenes and W. T. Reid. A note on the Weierstrass condition in the calculus of variations. *Bulletin of the American Mathematical Society*, 45(6):471–473, June 1939. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881x (electronic).

Hestenes:1974:MCQa

[HR74a] Magnus Hestenes and Ray Redheffer. On the minimization of certain quadratic functionals. I. *Archive for Rational Mechanics and Analysis*, 56(1):1–14, March 1974. CODEN AVRMAW. ISSN 0003-9527 (print), 1432-0673 (electronic).

Hestenes:1974:MCQb

[HR74b] Magnus Hestenes and Ray Redheffer. On the minimization of certain quadratic functionals. II. *Archive for Rational Mechanics and Analysis*, 56(1):15–33, March 1974. CODEN AVRMAW. ISSN 0003-9527 (print), 1432-0673 (electronic).

Hestenes:1951:SLE

[HS51] Magnus R. Hestenes and Marvin L. Stein. The solution of linear equations by minimization. NAML Report 52-45, National Bureau of Standards, Los Angeles, CA, USA, December 12, 1951.

Hestenes:1952:MCG

[HS52] Magnus R. Hestenes and Eduard Stiefel. Methods of conjugate gradients for solving linear systems. *Journal of Research of the National Bureau of Standards (1934)*, 49(6):409–436, December 1952. ISSN 0091-0635 (print), 2376-5305 (electronic). Research paper 2379.

Hestenes:1973:SLE

[HS73] M. R. Hestenes and M. L. Stein. The solution of linear equations by minimization. *Journal of Optimization Theory and Applications*, 11(4):335–359, April 1973. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Hestenes:1991:NIN

[HT91] Magnus R. Hestenes and John Todd. *NBS-INA, the Institute for Numerical Analysis, UCLA 1947–1954*. National Technical Information Service, Washington, DC, USA, August 1991. x + 198 (various) pp. URL `https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication730.pdf`. Cover title: Mathematicians learning to use computers:

the Institute for Numerical Analysis, UCLA, 1947–1954. Spine title: The Institute for Numerical Analysis, UCLA, 1947–1954. Sponsored in part by the Mathematical Association of America. Shipping list no.: 92-1306-M.

Hu:2020:SMH

[HWY20] Wujie Hu, Jinzhao Wu, and Gonglin Yuan. Some modified Hestenes–Stiefel conjugate gradient algorithms with application in image restoration. *Applied Numerical Mathematics: Transactions of IMACS*, 158(??): 360–376, December 2020. CODEN ANMAEL. ISSN 0168-9274 (print), 1873-5460 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0168927420302440`.

Japri:2021:NMH

[JBM21] Nur Athira Japri, Srimazzura Basri, and Mustafa Mamat. New modification of the Hestenes–Stiefel with strong Wolfe line search. In *AIP Conference Proceedings: SCIEMATHIC 2020*, volume 2355. American Institute of Physics, Woodbury, NY, USA, 2021.

Jeroslow:1977:BRO

[Jer77] Robert G. Jeroslow. Book review: *Optimization theory, the finite dimensional case*, by Magnus R. Hestenes, John Wiley and Sons, New York, London, Sydney, Toronto, 1975, xiii + 447. *Bulletin of the American Mathematical Society*, 83(3):324–336, May 1977. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881X (electronic).

Jittorntrum:1980:ACP

[Jit80] Krisorn Jittorntrum. Accelerated convergence for the Powell–Hestenes multiplier method. *Mathematical Programming*, 18 (2):197–214, December 1980. CODEN MHPGA4. ISSN 0025-5610 (print), 1436-4646 (electronic).

Khoshsimaye-Bargard:2023:DFS

[KBA23a] Maryam Khoshsimaye-Bargard and Ali Ashrafi. A descent family of the spectral Hestenes–Stiefel method by considering the quasi-Newton method. *Optimization Methods and Software*, 38(3):495–509, January 2023. ISSN 1026-7670 (print), 1055-6788 (electronic).

Khoshsimaye-Bargard:2023:FMT

[KBA23b] Maryam Khoshsimaye-Bargard and Ali Ashrafi. A family of the modified three-term Hestenes–Stiefel conjugate gradient method with sufficient descent and conjugacy conditions. *Journal of Applied Mathematics and Computing*, 69(3):2331–2360, January 2023. ISSN 1598-5865 (print), 1865-2085 (electronic).

Lee:1995:CPM

[Lee95] J. A. N. Lee. Computer pioneers: Magnus R. Hestenes. IEEE Web site., 1995. URL `https://`

history.computer.org/pioneers/hestenes.html.

Landesman:1991:LAA

[LH91] Edward M. Landesman and Magnus Rudolph Hestenes. *Linear Algebra: With Applications for Mathematics, Science, and Engineering*. Prentice-Hall, Upper Saddle River, NJ 07458, USA, 1991. ISBN 0-13-529561-0 (hardcover), 0-13-534967-2 (paperback). LCCN QA184 .L364 1991.

Lide:2001:CEM

[Lid01] D. R. Lide, editor. *A Century of Excellence in Measurements, Standards, and Technology: A Chronicle of Selected NBS/NIST Publications, 1901–2000*, volume 958. National Technical Information Service, Washington, DC, USA, 2001. ix + 386 pp. URL https://nvlpubs.nist.gov/nistpubs/sp958-lide/cntsp958old.htm. NIST Special Publication.

Li:2022:MTT

[LLW22] Dandan Li, Yuangfei Li, and Songhua Wang. A modified three terms Hestenes–Stiefel conjugate gradient projection algorithm and its application. *Journal of Jilin University. Science Edition. Jilin Daxue Xuebao. Lixue Ban*, 60(1):64–72, 2022. ISSN 1671-5489.

Maehly:1954:IAA

[Mae54] Hans J. Maehly. Zur iterativen Auflösung algebraischer Gleichungen. (German) [On the iterative solution of algebraic equations]. *Zeitschrift für Angewandte Mathematik und Physik = Journal of Applied Mathematics and Physics*, 5(3):260–263, May 1954. CODEN ZAMPDB. ISSN 0044-2275 (print), 1420-9039 (electronic).

Miele:1974:APM

[Mie74] A. Miele. An appreciation of Professor M. R. Hestenes. *Journal of Optimization Theory and Applications*, 14(5):445–451, November 1974. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic). Includes a list of 58 publications of Magnus Hestenes.

Nash:1990:HSC

[Nas90] Stephen G. Nash, editor. *A History of Scientific Computing*. ACM Press history series. Addison-Wesley and ACM Press, Addison-Wesley and New York, NY 10036, USA, 1990. ISBN 0-201-50814-1. xix + 359 pp. LCCN QA76.17 .H59 1990.

Narayanan:2021:LHD

[NK21] Sindhu Narayanan and P. Kaelo. A linear hybridization of Dai–Yuan and Hestenes–Stiefel conjugate gradient method for unconstrained optimization. *Numerical Mathematics. Theory, Methods and Applications*, 14(2):527–539, June 2021. ISSN 1004-8979 (print), 2079-7338 (electronic).

OLeary:2001:IMS

[O'L01a] Dianne P. O'Leary. Iteration method for the solution

of the eigenvalue problem of linear differential and integral operators. In Lide [Lid01], pages 77–80. URL `https://nvlpubs.nist.gov/nistpubs/sp958-lide/077-080.pdf`. NIST Special Publication.

OLeary:2001:MCG

[O'L01b] Dianne P. O'Leary. Methods of conjugate gradients for solving linear systems. In Lide [Lid01], pages 81–85. URL `https://nvlpubs.nist.gov/nistpubs/sp958-lide/077-080.pdf`. NIST Special Publication.

Pellegrini:1991:EHN

[Pel91] L. Pellegrini. An extension of the Hestenes necessary condition. *Journal of Optimization Theory and Applications*, 69(2):297–309, May 1991. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Profera:1977:SAH

[Pro77] Luigi Profera. Simple Artinian Hestenes ternary rings. *Atti Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. Nat. (8)*, 62(3):292–299, 1977. ISSN 0392-7881.

Paige:1953:SLE

[PT53] L. J. (Lowell J.) Paige and Olga Taussky, editors. *Simultaneous Linear Equations and the Determination of Eigenvalues[: proceedings of a symposium held 23–25 August 1951 at the Institute for Numerical Analysis, Los Angeles, California]*, volume 29 of *Applied Mathematics Series*. U.S. National Bureau of Standards, Gaithersburg, MD, USA, 1953. LCCN QA3 .U5 no. 29.

Qi:1996:MHS

[QHL96] Hou Duo Qi, Ji Ye Han, and Guang Hui Liu. The modified Hestenes–Stiefel conjugate gradient method. *Chinese Annals of Mathematics. Series A. Shuxue Niankan. A Ji*, 17(3):277–284, 1996. ISSN 1000-8314.

Raihen:2017:CRH

[Rai17] Nurul Md Raihen. Convergence rates for Hestenes' Gram–Schmidt conjugate direction method without derivatives in numerical optimization. Master's thesis, University of Toledo, Toledo, OH, USA, August 2017. x + 37 pp. URL `https://www.proquest.com/pqdtglobal/docview/2166237834`.

Reid:1971:LSS

[Rei71a] John Ker Reid, editor. *Large Sparse Sets of Linear Equations: Proceedings of the Oxford Conference of the Institute of Mathematics and its Applications held at St. Catherine's College, Oxford, 5–8 April 1970*. Academic Press, New York, USA, 1971. ISBN 0-12-586150-8 (hardcover). x + 284 pp. LCCN QA195 .L37 1971.

Reid:1971:MCG

[Rei71b] John Ker Reid. On the method of conjugate gradients for the solution of large sparse systems of linear equation. In *Large Sparse*

Sets of Linear Equations: Proceedings of the Oxford Conference of the Institute of Mathematics and its Applications held at St. Catherine's College, Oxford, 5–8 April 1970 [Rei71a], pages 231–254. ISBN 0-12-586150-8 (hardcover). LCCN QA195 .L37 1971.

Rosser:1951:SCE

[RLHK51] J. B. Rosser, C. Lanczos, M. R. Hestenes, and W. Karush. Separation of close eigenvalues of a real symmetric matrix. *Journal of Research of the National Bureau of Standards (1934)*, 47(4): 291–297, October 1951. ISSN 0091-0635 (print), 2376-5305 (electronic). Research Paper 2256.

Rivaie:2010:MHS

[RMMF10] Mohd Rivaie, Mustafa Mamat, Ismail Mohd, and Muhammad Fauzi. Modified Hestenes–Steifel conjugate gradient coefficient for unconstrained optimization. *Journal of Interdisciplinary Mathematics*, 13(3):241–251, June 2010. ISSN 0972-0502.

Rockafellar:1973:MMH

[Roc73] R. T. Rockafellar. The multiplier method of Hestenes and Powell applied to convex programming. *Journal of Optimization Theory and Applications*, 12(6): 555–562, December 1973. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Rupp:1975:CMM

[Rup75] R. D. Rupp. On the combination of the multiplier method of Hestenes and Powell with Newton's method. *Journal of Optimization Theory and Applications*, 15(2):167–187, February 1975. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Russell:1976:CVC

[Rus76] David L. Russell, editor. *Calculus of Variations and Control Theory. Proceedings of a Symposium conducted by the Mathematics Research Center, University of Wisconsin, Madison, Wisconsin, September 22–24, 1975. Dedicated to Laurence Chisholm Young on the occasion of his 70th birthday*. Academic Press, New York, USA, 1976. ISBN 0-12-604150-4. LCCN QA3 .U45 no. 36 QA315; QA402.3. Publication number 36.

Salleh:2016:EMH

[SA16] Zabidin Salleh and Ahmad Alhawarat. An efficient modification of the Hestenes–Stiefel nonlinear conjugate gradient method with restart property. *Journal of Inequalities and Applications*, pages Paper No. 110, 14, April 2016. ISSN 1029-242X.

Sciutti:1977:CCH

[Sci77] D. Sciutti. On a characterization of convergence for the Hestenes method of multipliers. *Journal of Optimization Theory and Applications*, 22(2):227–237, June 1977. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Shi:2001:MHS

[Shi01] Zhen Jun Shi. A modified Hestenes–Stiefel conjugate gradient method and its global convergence. *Mathematica Numerica Sinica. Jisuan Shuxue*, 23(4): 393–406, 2001. ISSN 0254-7791.

Sun:2015:MHS

[SL15] Min Sun and Jing Liu. A modified Hestenes–Stiefel projection method for constrained nonlinear equations and its linear convergence rate. *Journal of Applied Mathematics and Computing*, 49(1–2):145–156, September 2015. ISSN 1598-5865 (print), 1865-2085 (electronic).

Sun:2018:RCP

[SLLT18] Zhongbo Sun, Yufeng Lian, Shuaishi Liu, and Yantao Tian. A rapidly convergent projected Hestenes–Stiefel conjugate gradient algorithm for optimal robust controller of bipedal walking robots. In *2018 IEEE 8th Annual International Conference on CYBER Technology in Automation, Control, and Intelligent Systems (CYBER)*, pages 1094–1099. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2018.

Sugon:2002:HSA

[SM02] Qurino M. Sugon and Daniel McNamara. A Hestenes spacetime algebra approach to light polarization. In *Applications of geometric algebra in computer science and engineering (Cambridge, 2001)*, pages 297–306. Birkhäuser Boston Inc., Cambridge, MA, USA, 2002. ISBN 0-8176-4267-6.

Smiley:1969:IHT

[Smi69] M. F. Smiley. An introduction to Hestenes ternary rings. *American Mathematical Monthly*, 76 (3):245–248, March 1969. CODEN AMMYAE. ISSN 0002-9890 (print), 1930-0972 (electronic).

Snyman:1982:HST

[Sny82] J. A. Snyman. A Hestenes–Stiefel type method for solving nonlinear two-point boundary value problems. In *Proceedings of the eighth South African symposium on numerical mathematics (Durban, 1982)*, pages 125–137. University of Natal, Durban, South Africa, 1982. ISBN 0-86980-316-6.

Spera:1978:HTR

[Spe78] Antonino Giorgio Spera. Hestenes ternary rings. *Rendiconti del Circolo Matematico di Palermo. Serie II*, 27(2):289–304, May 1978. ISSN 0009-725x (print), 1973-4409 (electronic).

Spera:1975:RHR

[Spe76] Antonino Giorgio Spera. Radical of a Hestenes ring. *Atti Accad. Sci. Lett. Arti Palermo Parte I (4)*, 35:283–296, 1975/76. ISSN 0365-0448.

Shapiee:2014:NMH

[SRMM14] Norrlaili Shapiee, Mohd Rivaie, Mustafa Mamat, and Ismail

Mohd. A new modification of Hestenes–Stiefel method with descent properties. In *AIP Conference Proceedings*, volume 1602, pages 520–526. American Institute of Physics, Woodbury, NY, USA, 2014.

Stephenson:1968:JST

[Ste68] Robert Allan Stephenson. *Jacobson Structure Theory for Hestenes Ternary Rings*. Ph.D. dissertation, University of California, Riverside, Riverside, CA, USA, 1968. 38 (est.) pp. URL `https://www.proquest.com/docview/302333090`.

Stephenson:1973:JST

[Ste73] Robert Allan Stephenson. Jacobson structure theory for Hestenes ternary rings. *Transactions of the American Mathematical Society*, 177:91–98, March 1973. CODEN TAMTAM. ISSN 0002-9947 (print), 1088-6850 (electronic).

Steihaug:1982:BRC

[Ste82] Trond Steihaug. Book review: *Conjugate Direction Methods in Optimization*, by Magnus Hestenes. *Mathematics of Computation*, 38(157):332–333, January 1982. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic). URL `https://www.jstor.org/stable/2007488`.

Sugihara:2014:RSP

[Sug14] Tomomichi Sugihara. Robust solution of prioritized inverse kinematics based on Hestenes–Powell multiplier method. In *2014 IEEE/RSJ International Conference on Intelligent Robots and Systems*, pages 510–515. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2014.

Stephanopoulos:1975:UHM

[SW75] G. Stephanopoulos and A. W. Westerberg. The use of Hestenes' method of multipliers to resolve dual gaps in engineering system optimization. *Journal of Optimization Theory and Applications*, 15(3):285–309, March 1975. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Sai:2015:SHS

[SW15] Nao Erzai Sai and Xiao Yun Wu. Spectral Hestenes–Steifel conjugate gradient method and its global convergence. *Mathematics in Practice and Theory. Shuxue de Shijian yu Renshi*, 45 (18):261–270, 2015. ISSN 1000-0984.

Tabak:1970:BCM

[Tab70] Daniel Tabak. B70-6: *Computing Methods in Optimization Problems — 2*, L. A. Zadeh, L. W. Neustadt, and A. V. Balakrishnan, Eds. (Academic Press, Inc., NY, 1969, 393 pp.). *IEEE Transactions on Computers*, C-19(10):986, October 1970. CODEN ITCOB4. ISSN 0018-9340 (print), 1557-9956 (electronic). URL `http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1671404`.

Wang:2023:CST

[Wan23] Xiaoliang Wang. A class of spectral three-term descent Hestenes–Stiefel conjugate gradient algorithms for large-scale unconstrained optimization and image restoration problems. *Applied Numerical Mathematics: Transactions of IMACS*, 192(??): 41–56, October 2023. CODEN ANMAEL. ISSN 0168-9274 (print), 1873-5460 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0168927423001538`.

Du:2009:EPH

[wDLLQ09] Xue wu Du, Yu Li, Qian Li, and Shuai Qin. Exactness properties of the Hestenes–Powell augmented Lagrangian function for inequality constrained optimization problems. *Gongcheng Shuxue Xuebao*, 26(1):138–146, 2009. ISSN 1005-3085.

Wei:2010:MHS

[WHT10] Zeng Xin Wei, Hai Dong Huang, and Yan Rong Tao. A modified Hestenes–Stiefel conjugate gradient method and its convergence. *Journal of Mathematical Research and Exposition*, 30(2): 297–308, 2010. ISSN 1000-341X.

Wang:2017:TNS

[WSH+17] Guofang Wang, Rui Shan, Wei Huang, Wen Liu, and Jingyi Zhao. Two new spectral conjugate gradient algorithms based on Hestenes–Stiefel. *Journal of Algorithms & Computational Technology*, 11(4):345–352, August 2017. ISSN 1748-3018 (print), 1748-3026 (electronic).

Wang:2014:FIH

[WZ14] Xinying Wang and Joseph Zambreno. An FPGA implementation of the Hestenes–Jacobi algorithm for singular value decomposition. In *2014 IEEE International Parallel & Distributed Processing Symposium Workshops*, pages 220–227. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2014.

Yuan:2016:MHS

[YML16] Gonglin Yuan, Zehong Meng, and Yong Li. A modified Hestenes and Stiefel conjugate gradient algorithm for large-scale nonsmooth minimizations and nonlinear equations. *Journal of Optimization Theory and Applications*, 168(1):129–152, July 2016. CODEN JOTABN. ISSN 0022-3239 (print), 1573-2878 (electronic).

Young:1968:RCV

[You68] L. C. Young. Reviews: *Calculus of Variations and Optimal Control Theory*, by Magnus F. Hestenes. *American Mathematical Monthly*, 75(10):1135, December 1968. CODEN AMMYAE. ISSN 0002-9890 (print), 1930-0972 (electronic).

Yuan:2013:MHS

[YZ13] Gonglin Yuan and Maojun Zhang. A modified Hestenes–

Stiefel conjugate gradient algorithm for large-scale optimization. *Numerical Functional Analysis and Optimization*, 34(8): 914–937, August 2013. CODEN NFAODL. ISSN 0163-0563 (print), 1532-2467 (electronic).

Zhang:2009:NVH

[Zha09] Li Zhang. New versions of the Hestenes–Stiefel nonlinear conjugate gradient method based on the secant condition for optimization. *Computational & Applied Mathematics*, 28(1):111–133, 2009. ISSN 1807-0302 (print), 2238-3603 (electronic).

Zadeh:1969:CMO

[ZNB69] Lotfi A. Zadeh, Lucien W. Neustadt, and A. V. Balakrishnan, editors. *Computing Methods in Optimization Problems. Papers presented at the 2nd International Conference on Computing Methods in Optimization Problems, San Remo, Italy, September 9–13, 1968*, volume 14 of *Lecture Notes in Operations Research and Mathematical Economics*. Academic Press, New York, USA, 1969. LCCN QA402.5 .I5 1968.

Zuse:1979:REC

[Zus79] Konrad Zuse. Die Rolle der ETH bei der Computerentwicklung. Dem Andenken an Eduard Stiefel. (German) [The role of ETH in computer development: In memory of Eduard Stiefel]. *Zeitschrift für Angewandte Mathematik und Physik = Journal of Applied Mathematics and Physics*, 30(2):399–403, March 1979. CODEN ZAMPDB. ISSN 0044-2275 (print), 1420-9039 (electronic).

Zhang:2012:NCP

[ZZ12] Li Zhang and Youhua Zhou. A note on the convergence properties of the original three-term Hestenes–Stiefel method. *Advanced Modeling and Optimization*, 14(1):159–163, 2012. ISSN 1841-4311.

Zhou:2013:SCM

[ZZ13] Weijun Zhou and Youhua Zhou. On the strong convergence of a modified Hestenes–Stiefel method for nonconvex optimization. *Journal of Industrial and Management Optimization*, 9(4): 893–899, 2013. ISSN 1547-5816 (print), 1553-166X (electronic).