

BIOGRAPHICAL SKETCH

Michael Holst

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PROFESSIONAL PREPARATION

Colorado State University	Mathematics	B.S.	1987
University of Illinois	Numerical Analysis	M.S.	1990
University of Illinois	Numerical Analysis	Ph.D.	1993
Caltech	Applied Mathematics	Prize Research Fellow	1993-1995

PROFESSIONAL APPOINTMENTS

Chancellor's Associates Endowed Chair VIII	UC San Diego	2012-
Professor of Physics	UC San Diego	2009-
Visiting Associate in Physics	Caltech	2002-2009
Professor of Mathematics	UC San Diego	2003-
Associate Professor of Mathematics	UC San Diego	2000-2003
Assistant Professor of Mathematics	UC San Diego	1998-2000
Assistant Professor of Mathematics	UC Irvine	1997-1998
von Karman Instructor of Applied Mathematics	Caltech	1995-1997

RELEVANT PUBLICATIONS

1. M. HOLST, G. NAGY, AND G. TSOGTGEREL, *Rough solutions of the Einstein constraints on closed manifolds without near-CMC conditions*, Comm. Math. Phys., 288 (2009), pp. 547-613. Available as [arXiv:0712.0798 \[gr-qc\]](https://arxiv.org/abs/0712.0798).
2. M. HOLST, G. NAGY, AND G. TSOGTGEREL, *Far-from-constant mean curvature solutions of Einstein's constraint equations with positive Yamabe metrics*, Phys. Rev. Lett., 100 (2008), pp. 161101.1-161101.4. Available as [arXiv:0802.1031 \[gr-qc\]](https://arxiv.org/abs/0802.1031).
3. M. HOLST, E. LUNASIN, AND G. TSOGTGEREL, *Analysis of a general family of regularized Navier-Stokes and MHD models*, J. Nonlin. Sci., 20 (2010), pp. 523-567. Available as [arXiv:0901.4412 \[math.AP\]](https://arxiv.org/abs/0901.4412).
4. M. HOLST AND A. STERN, *Semilinear mixed problems on Hilbert complexes and their numerical approximation*, Found. Comput. Math., 12 (2012), pp. 363-387. Available as [arXiv:1010.6127 \[math.NA\]](https://arxiv.org/abs/1010.6127).
5. M. HOLST AND A. STERN, *Geometric variational crimes: Hilbert complexes, finite element exterior calculus, and problems on hypersurfaces*, Found. Comput. Math., 12 (2012), pp. 263-293. Available as [arXiv:1005.4455 \[math.NA\]](https://arxiv.org/abs/1005.4455).

OTHER PUBLICATIONS

1. L. CHEN, M. HOLST, AND J. XU, *The finite element approximation of the nonlinear Poisson-Boltzmann Equation*, SIAM J. Numer. Anal., 45 (2007), pp. 2298-2320. Available as [arXiv:1001.1350 \[math.NA\]](https://arxiv.org/abs/1001.1350).
2. L. CHEN, M. HOLST, AND J. XU, *Convergence and optimality of adaptive mixed finite element methods*, Math. Comp., 78 (2009), pp. 35-53. Available as [arXiv:1001.1353 \[math.NA\]](https://arxiv.org/abs/1001.1353).
3. Y. ZHOU, M. HOLST, AND J. MCCAMMON, *Nonlinear elastic modeling of macromolecular conformational change induced by electrostatic forces*, J. Math. Anal. Appl., 340 (2008), pp. 135-164. Available as [arXiv:1001.1371 \[math.AP\]](https://arxiv.org/abs/1001.1371).
4. O. KOROBKIN, B. AKSOYLU, M. HOLST, E. PAZOS, AND M. TIGLIO, *Solving the Einstein constraints on multi-block triangulations using finite elements*, Class. Quantum Grav., 26 (2009), pp. 83-108. Available as [arXiv:0801.1823 \[gr-qc\]](https://arxiv.org/abs/0801.1823).
5. I. STAKGOLD AND M. HOLST, *Green's Functions and Boundary Value Problems*, John Wiley & Sons, Inc., New York, NY, third ed., 888 pages, February 2011. The preface and table of contents of the book are available at: <http://ccom.ucsd.edu/~mholst/pubs/dist/StHo2011a-preview.pdf>.

SYNERGISTIC ACTIVITIES

Software and Other Projects: Primary developer and project lead for FETK (The Finite Element ToolKit; see the website <http://www.FETK.org>), an open-source (in accordance with University policy) software project providing development infrastructure for MC and supporting tools MALOC, PUNC, SG, and GAMER.

Directorships/Committees: Co-director: Center for Computational Mathematics (CCoM), Program in Computational Science, Mathematics, and Engineering (CSME); Senior Scientist: Center for Theoretical Biological Physics (CTBP), National Biomedical Computation Resource (NBCR); Executive/Steering Committees: San Diego Supercomputer Center (SDSC), La Jolla Interfaces in Science (LJIS), So. Cal. Applied Mathematics Symposium (SoCAMS); Participating Faculty: Interfaces Ph.D. Program, Bioinformatics Ph.D. Program, Cal-(IT)² Internship Program; Review Committees: U. Chicago ANL Math/CS Division (MCS).

Organizational: Southern California Applied Mathematics Symposium; Caltech Year-long Program: Numerical GR, 2002-2003; Caltech Workshop: The Evolution Problem, Fall 2002; Caltech Workshop: The Initial Data Problem, Spring 2003; Miami Waves Mini-symposium: Numerical GR, January 2004; IPAM Workshop: Relativistic Astrophysics, May 2005; Beijing Workshop: Computational Mathematics, August 2005; MSRI Workshop: Numerical Methods and Algorithms for Geometric Evolution Equations, Spring 2007; IMA Year-long Program: Mathematics and Chemistry, 2008-2009; IMA Workshop: Solvation, Fall 2008; REB60 Workshop, Fall 2009; 26th Pacific Coast Gravity Meeting, Spring 2010; 6th Annual Structured Integrators Meeting, Spring 2010; 20th International Conference on Domain Decomposition Methods, Winter 2011.

Editorial: *DD20 Proceedings Volume* (2011), *SIAM CS&E Book Series* (2009–), *Numerische Mathematik* (2008–), *SIAM J. Numer. Anal.* (2004–2008), *SIAM Review* (2003–2006), *Comm. Math. Sci.* (2003-2006).

Other: CSU Distinguished Alumnus Award (2009); UCSD Outstanding Faculty Mentor Award (2005–2006); NSF CAREER Award (1999–2004); UCSD Hellman Fellowship (1999); UCI COR Award (1998); Caltech Prize Fellowship (1993–1995).

COLLABORATORS

i. Collaborators in last 48 months:

Burak Aksoylu (Mathematics, LSU), Nathan Baker (PNNL, Hanford), Randolph Bank (Mathematics, UCSD), Stephen Bond (SNL, New Mexico), Long Chen (Mathematics, UCI), Donald Estep (Mathematics, CSU), Philip Gill (Mathematics, UCSD), James Isenberg (Mathematics, U. Oregon), Mats Larson (Goteborg, Sweden), Lee Lindblom (Physics, Caltech), Evelyn Lunasin (Mathematics, UCSD), J.A. McCammon (Chemistry, UCSD), Gabriel Nagy (Mathematics, UCSD), Olivier Sarbach (Physics, U. Michoacana), Ivar Stakgold (Mathematics, UCSD), Ryan Szymowski (Mathematics, UCSD), Simon Tavener (Mathematics, CSU), Gantumur Tsogtgerel (Mathematics, UCSD), Jinchao Xu (Mathematics, Penn State U.), Zeyun Yu (Computer Science, U. of Wisconsin–Milwaukee), Yongcheng Zhou (Mathematics, CSU).

ii. Graduate and Postdoctoral Advisors:

Thesis Advisor: Faisal Saied (University of Illinois at Urbana-Champaign).

Post Doctoral Advisor: Herbert Keller (California Institute of Technology).

iii. Thesis Advisor and Postgraduate-Scholar Sponsor:

Doctoral students (6 completed, 9 current, 8 advanced): B. Aksoylu (2001; LSU); N. Baker (2001; PNNL); K. Tai (2002; Oxford U.); K. Scully (2003; Aerospace Corp.); J. Fenwick (2005; Far-Tech Corp.); R. Szymowski (2008; UCSD). Current: D. McAllaster (2011; UCSD-Math); A. Kovner (2011; UCSD-Math/CSME); M. Ebrahimi (2011; UCSD-Math/CSME); C. Tiee (2012; UCSD-Math); J. Serencsa (2012; UCSD-Math/CSME); S. Pollock (2012; UCSD-Math/CSME); C. Meier (2012; UCSD-Math); H. Hu (2013; UCSD-Physics/CSME). S. Cheng (2014; UCSD-Math/CSME).

Postdoctoral advisees (16 completed, 4 current): F. Wang (2000-2001; Oracle); S. Bond (2000-2003; SNL); H. MacMillan (2001-2003; Clemson U.); J. Suen (2002-2004; UCLA); J. Erway (2006-2007; Wake Forest); O. Sarbach (2005-2006; U. Michoacana); L. Chen (2005-2006; UC Irvine); A. Malqvist (2006-2007; Uppsala). G. Nagy (2004-2008; Michigan State U.); D. Reynolds (2005-2008; SMU); B. Lu (2006-2008; U. of Sci. and Tech. China); Y. Cheng (2006-2009; UCSD); Z. Yu (2006-2008; U. of Wisconsin-Milwaukee); Y. Zhou (2006-2008; Colorado State U.); G. Tsogtgerel (2006-2009; McGill U.); E. Lunasin (2006-2009; Michigan U.). Current: R. Szymowski (2008-; UCSD); Y. Zhu (2008-; Penn State); A. Stern (2009-; Caltech); A. Gillette (2011-; UT Austin).

Undergraduate research/thesis students (13 completed, 1 current): J. Kleint (2002; UCSD, CallT2 Summer Program); J. Noble (2003; UCSD, Math Honors Thesis); R. Page (2006; UC Berkeley, UC STARS/UC LEADS Summer Program); P. Sanan (2006; UCSD); B. Nguyen (2006; UCSD, CallT2 Summer Program); J. Kommemi (2006-2007; UCSD, Enrichment/CallT2 Summer Program, Math Honors Thesis, Dean's Award); E. Eldridge (2007-2008; UCSD, CTBP Academic Year and Summer Internships); J. Webster (2007-2008; UCSD, Math Honors Thesis); C. Wood (2008; UCSD, CAMPS Summer Internship); K. Farrell (2008-2009; UCSD, Math Honors Thesis, Dean's Award, Silagi Award); J. Lee (2009; UC Santa Cruz); H. Miles-Leighton (2009-2010; UCSD); N. Miller (2008-2011; UCSD). Current: A. Chiu (2011; NYU).