

Juan G. Calvo

Institute of Mathematics, Czech Academy of Sciences
Žitná 25, 115 67 Praha 1, Czech Republic
☎ (420) 222 090 703 • ✉ calvo@math.cas.cz

Education

Courant Institute, New York University <i>Mathematics, Ph.D.</i>	New York, USA <i>May, 2015</i>
Universidad de Costa Rica <i>Mathematics, B.S.</i>	San José, Costa Rica <i>Feb, 2010</i>
Universidad Estatal a Distancia <i>Mathematics Education, B.S.</i>	San José, Costa Rica <i>July, 2004</i>

Professional Experience

Institute of Mathematics, Czech Academy of Sciences <i>Postdoc</i>	Prague, Czech Republic <i>Oct, 2016 – present</i>
University of Costa Rica <i>Invited Professor</i> Courses: Complex Variable, Introduction to Analysis	San José, Costa Rica <i>Aug, 2015 – Sep, 2016</i>
Costa Rican Math Olympiads <i>Member of the Organizing Committee</i>	San José, Costa Rica <i>Jan, 2016 – Sep, 2016</i>
University of Concepción <i>Invited Researcher</i>	Concepción, Chile <i>Jul, 2016 – Aug, 2016</i>
Costa Rican Scientific High School <i>Teacher</i> Courses: Elementary Math, Number Theory, Linear Algebra	San José, Costa Rica <i>Feb, 2016 – Jul, 2016</i>
New York University <i>Teaching Assistant</i> Courses: Numerical Analysis	New York, USA <i>Set, 2013 – May, 2015</i>
New York University <i>Assistant</i> Courses: Elementary Math, Linear Algebra, Scientific Computing, Numerical Methods	New York, USA <i>Jun, 2011 – May, 2013</i>
University of Costa Rica <i>Interim Professor</i> Courses: Calculus I, Calculus II, Calculus III, Differential Equations, Linear Algebra	San José, Costa Rica <i>Mar, 2005 – Jul, 2010</i>
Costa Rican Scientific High School <i>Teacher</i> Courses: Elementary Math, Calculus I, Advanced Math	San José, Costa Rica <i>Dec, 2007 – Jul, 2010</i>

Publications

- J. Calvo and O. Widlund. *An adaptive choice of primal constraints for BDDC domain decomposition algorithms*. Technical Report TR2015-979, Courant Institute, NYU, 2016. To appear.

- J. Calvo. *A BDDC algorithm with deluxe scaling for $H(\text{curl})$ for two dimensions with irregular subdomains*. Math. Comp., 85 (2016), 1085-1111.
- J. Calvo. *A two-level overlapping Schwarz method for $H(\text{curl})$ in two dimensions for irregular subdomains*. Electron. Trans. Numer. Anal., 44 (2015), 497-521.

Preprints

- J. Calvo. *A new coarse space for overlapping Schwarz algorithms for $H(\text{curl})$ in three dimensions with irregular subdomains*. 2016. Submitted.
- J. Calvo. *Domain Decomposition Methods for Problems in $H(\text{curl})$* (doctoral dissertation). Technical Report TR2015-975, Courant Institute, NYU, June, 2015.
- J. Calvo, E. Colmenares, G. Gatica. *A dual-fully-mixed finite element method for the stationary Boussinesq problem*. In progress.
- F. Sanchez, J. Calvo and E. Segura. *An age-structured ODE model for dengue transmission dynamics and control*. In progress.
- J. Calvo. *An adaptive BDDC method with deluxe scaling for problems in $H(\text{curl})$* . In progress.

Talks

Colloquium in Applied Math and Statistics, CIMPA <i>A Finite Element Method for the Boussinesq stationary problem</i>	San José, Costa Rica <i>Sep, 2016</i>
Math Colloquium, University of Costa Rica <i>Introduction to Mixed Finite Elements</i>	San José, Costa Rica <i>Sep, 2016</i>
X International Math Festival <i>Workshop: Strategies for National Math Olympiads training</i>	San José, Costa Rica <i>Jun, 2016</i>
Capricorn Math Congress <i>A Schwarz algorithm in $H(\text{curl})$ for irregular subdomains in 3D</i>	Antofagasta, Chile <i>Aug, 2016</i>
Cuba-Mexico Meeting on Numerical Methods and Optimization <i>A two-level overlapping Schwarz algorithm in $H(\text{curl})$ and irregular subdomains in 3D</i>	La Habana, Cuba <i>Jan, 2016</i>
Fifth Chilean Workshop on Numerical Analysis of PDEs <i>An Adaptive Choice of Primal Constraints for BDDC Algorithms</i>	Concepción, Chile <i>Jan, 2016</i>
Colloquium in Applied Math and Statistics, CIMPA <i>A two-level overlapping Schwarz additive method in three dimensions</i>	San José, Costa Rica <i>Oct, 2015</i>
Math Colloquium, University of Costa Rica <i>A deluxe BDDC method for problems in $H(\text{curl})$</i>	San José, Costa Rica <i>Dec, 2014</i>

Attended Conferences

- PETSc Conference and Tutorial, Argonne National Laboratory, Lemont, IL. June, 2015.
- Mid-Atlantic Numerical Analysis Day, Temple University, Philadelphia, PA. November, 2014.
- NSF-CBMS Conference: Fast Direct Solvers for Elliptic PDEs, Dartmouth College, Hanover, New Hampshire. June, 2014.
- NSF-CBMS Conference: Finite Element Exterior Calculus Conference, Brown University, Providence. June, 2012.

Fellowships

- 2010-2015 – MacCraken Fellowship, University of New York
- 2006-2009 – Stimulus Scholarship, University of Costa Rica
- 2002-2005 – Honor Fellowship, University of Costa Rica.

Honors

- 2016 – Leader, International Math Olympiad, Hong Kong.
- 2010 – Graduation with honors, Mathematics, B.S., University of Costa Rica.
- 2009 – Participant, 1st World Youth Bridge Championship, Turkey.
- 2009 – Champions, 25th Central American and Caribbean Bridge Championship, Guadeloupe Island.
- 2003 – Best student in the career of Electrical Engineering, University of Costa Rica.
- 2002 – Participant, XVII Iberoamerican Mathematical Olympiad, El Salvador.
- 2001 – Bronze medal, XVI Iberoamerican Mathematical Olympiad, Uruguay.
- 2001 – Silver medal, Costa Rican Mathematical Olympiad, level C+.
- 2000 – Bronze medal, II Central American and Caribbean Mathematical Olympiad, El Salvador.
- 2000 – Silver medal, Costa Rican Mathematical Olympiad, level C.
- 2000 – Honorable mention, XII Asiatic-Pacific Mathematical Olympiad.
- 1999 – Gold medal, Costa Rican Mathematical Olympiad, level B.

Languages

Spanish: Native

English: Fluent

Skills and qualifications

- Windows, Linux and MacOS environments.
- Programming ability in C, C++, Java, Mathematica, Matlab, Python.
- High Performance Computing knowledge, familiar with OpenMP, OpenCL, PETSc.

Graduate coursework

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| - Real Variables | - Complex Variables |
| - Linear Algebra | - Numerical Methods I, II |
| - Ordinary Differential Equations | - Partial Differential Equations I, II |
| - Harmonic Analysis | - Functional Analysis |
| - Adv. Topics in Numerical Optimization | - Adv. Topics in Approximation Theory |
| - Adv. Topics in Fast Algorithms | - Adv. Topics in Mathematical Fluid Dynamics |
| - Adv. Topics in Elliptic PDEs | - Adv. Topics in Finite Element Methods |
| - Adv. Topics in Spectral Methods | - Adv. Topics in High Performance Computing |

References

- Dr. Olof Widlund, widlund@cims.nyu.edu. Courant Institute, New York University, NY.
- Dr. Clark Dohrmann, crdohrm@sandia.gov. Sandia National Laboratories, Albuquerque, NM.