CURRICULUM VITAE
PABLO SELESON

CONTACT INFORMATION

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RESEARCH INTERESTS

- Multiscale modeling and simulation in materials science
- Domain decomposition methods
- Computational physics and computational mathematics
- Astrophysics and cosmology

EDUCATION

Florida State University, Tallahassee, Florida, USA

▷ **Ph.D., Computational Science** **08/2010**
Dissertation: *"Atomistic and nonlocal continuum models for materials: connections and coupling"*
Advisor: Prof. Max Gunzburger
GPA: 4.00/4.00

Hebrew University of Jerusalem, Jerusalem, Israel

▷ **M.S., Physics** **08/2006**
Thesis: *"The Buildup of Galaxies in Dark-Matter Halos"*
Advisor: Prof. Avishai Dekel
GPA: 4.32/4.35

Hebrew University of Jerusalem, Jerusalem, Israel

▷ **B.S., Physics, Philosophy** **08/2002**
Magna cum Laude
GPA: 4.09/4.35

RESEARCH EXPERIENCE

Sandia National Laboratories, Albuquerque, NM, USA

▷ **Summer Intern** **05/2008-08/2008**
Worked with Dr. Michael L. Parks, Computer Science Research Institute

- Implemented the peridynamics state theory in the PDLAMMPS code
- Completed computational experiments comparing the peridynamics model (as an upscaled molecular dynamics model) to fully molecular dynamics experiments

Florida State University, Tallahassee, Florida, USA

▷ **Research Assistant** **08/2006-05/2007**
Worked with Dr. Raúl Tempone, Department of Scientific Computing

- Applied Smolyak and tensor product quadratures to high-dimensional integrations
- Developed parallel implementations using MPI

Institute of Astrophysics of Paris, Paris, France
▷ **Research Assistant** **01/2005-03/2005**
Worked with Prof. Avishai Dekel

- Performed statistical analysis of N-body and hydrodynamical simulations
- Provided quantitative and qualitative descriptions of cold flows through shocks

Hebrew University of Jerusalem, Jerusalem, Israel
▷ **Research Assistant** **10/2001-06/2002**
In the group of Prof. Amir Sa'ar, Department of Applied Physics

- Performed ellipsometric measurements of thin layer structures in porous silicon
- Developed numerical algorithms to compute dielectric properties of materials

Weizmann Institute of Science, Rehovot, Israel
▷ **Summer Intern** **07/2001-09/2001**
In the group of Prof. Mordehai Heiblum, Department of Condensed Matter Physics

- Performed measurements of shot noise
- Developed alternative techniques for the spectrum analyzer

TEACHING EXPERIENCE

Hebrew University of Jerusalem, Jerusalem, Israel
▷ **Teaching Assistant** **03/2003-07/2005**

- Taught X-Ray diffraction by crystals to 20 undergraduate physics majors
- Guided students through experimental steps; graded reports and colloquiums

Maayanot Institute, Jerusalem, Israel
▷ **Mathematics Supervisor** **10/2005-07/2006**

- Supervised a special project for high school students, to improve their performance on qualifying exams
- Assisted in the design of educational programs, organized monthly meetings, and audited teachers performance
- Organized and supervised a Summer math camp

Maayanot Institute, Jerusalem, Israel
▷ **Teaching Assistant** **03/2000-10/2005**

- Taught quarterly intensive math workshops in high schools and elementary schools, each consisting of roughly 30 students
- Participated in evaluation and training meetings; prepared reports and evaluations

Jewish Agency for Israel, Jerusalem, Israel
▷ **Teacher** **07/2000-08/2000**

- Taught physics and mathematics to 25 high school students
- Graded exams and assignments

ORT High School, Buenos Aires, Argentina

▷ **Teaching Assistant** **03/1997-08/1997**

- Gave support to high school teachers during Math classes
- Provided individual in-class help to students

HONORS AND AWARDS

- StudentStar nomination (Florida State University) 2009
- 33rd Society for Industrial and Applied Mathematics Southeastern-Atlantic Section (SIAM-SEAS) student paper prize 2009
- Member of the Honor Society of Phi Kappa Phi 2008
- Member of Golden Key International Honour Society 2007
- Graduate studies excellence scholarship 2003-2004
  Faculty of Natural Sciences, Hebrew University of Jerusalem

JOURNAL PAPERS

1. **Pablo Seleson** and Max Gunzburger, *"Bridging methods for AtC coupling and their implementation"*. Accepted for publication in Communications in Computational Physics, 2009.
2. **Pablo Seleson**, Michael L. Parks, Max Gunzburger, and Richard B. Lehoucq, *"Peridynamics as an Upscaling of Molecular Dynamics"*. Accepted for publication in Multiscale Modeling and Simulation, 2009.

TECHNICAL REPORTS

1. **Pablo Seleson**, Michael L. Parks, and Max Gunzburger, *"Peridynamics as an Upscaling of Molecular Dynamics"*, in CSRI Summer Proceedings, D. Ridzal and S. S. Collis (editors), Sandia National Laboratories, 2008, pp. 177-184. Available as Sandia National Laboratories Technical Report SAND2008-8257P.
2. Michael L. Parks, **Pablo Seleson**, Steven J. Plimpton, Richard B. Lehoucq, and Stewart S. Silling, *"Peridynamics with LAMMPS: A User Guide"*, Technical Report SAND2008-0135, Sandia National Laboratories, January 2008.

PRESENTATIONS

1. *"Peridynamics as an upscaling of molecular dynamics"*, contributed talk, The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, June 24-27, 2009, Blacksburg, Virginia, USA.
2. *"Molecular dynamics at larger scales: Peridynamics as an upscaling of molecular dynamics"*, colloquium talk, Introductory SC Graduate Student Seminar, April 17, 2009, Department of Scientific Computing, Florida State University, Tallahassee, Florida, USA.
3. *"Peridynamics as an Upscaling of Molecular Dynamics"*, invited talk, 33rd SIAM-SEAS Conference 2009, April 4-5, 2009, University of South Carolina, Columbia, South Carolina, USA.

4. *"Introduction to Software Versioning, SVN & CVS"*, talk at the SCS technical topics series, October 10, 2007, School of Computational Science, Florida State University, Tallahassee, Florida, USA.
5. *"Managing Software development using SVN, a case study"*, talk at the SCS technical topics series, February 28, 2007, School of Computational Science, Florida State University, Tallahassee, Florida, USA.

POSTER PRESENTATIONS

1. *"Peridynamics as an Upscaling of Molecular Dynamics"*, Computational Xposition 2009, April 14, 2009, Department of Scientific Computing, Florida State University, Tallahassee, Florida, USA.
2. *"Bridging Methods and Boundary Treatment for AtC Coupling Problems"*, The Fourth International Conference on Multiscale Materials Modeling (MMM-2008), October 27-31, 2008, Florida State University, Tallahassee, Florida, USA.
3. *"Peridynamics as an Upscaling of Molecular Dynamics"*, Applied Mathematics Principal Investigators Meeting (AMR08), October 15-17, 2008, Argonne National Laboratory, Argonne, Illinois, USA.
4. *"Bridging Methods and Boundary Treatment for AtC Coupling Problems"*, The 4th Annual Meeting of the Florida Society for Materials Simulation (2008 FSMS), May 5-7, 2008, Florida State University, Tallahassee, Florida, USA.
5. *"Bridging Methods and Boundary Treatment for AtC Coupling Problems"*, Computational Xposition 2008, February 25, 2008, Department of Scientific Computing, Florida State University, Tallahassee, Florida, USA.
6. *"The Buildup of Galaxies in Dark-Matter Halos"*, Nearly Normal Galaxies in a ΛCDM Universe conference, August 8-12, 2005, UC Santa Cruz, Santa Cruz, California, USA.

PROFESSIONAL ACTIVITIES

- Summer School: DOE Summer School on Multiscale Mathematics and High Performance Computing, July 29-June 3, 2007, Oregon State University, Oregon, USA
- Student member: Society for Industrial and Applied Mathematics (SIAM) 2007

COMPUTER PROFICIENCIES

- Programming languages: Fortran 77, Fortran 90, C++, Java, MPI, Matlab
- Operating systems: Microsoft Windows, Mac OS X, Unix, Linux
- Additional software: Latex, HTML, SVN, Mathematica, MathCad, LAMMPS, LabView, Supermongo, Microsoft Office

REFERENCES

References are available on request.