

# Adam Sorini–Résumé

## CONTACT INFO

- Mailing Address: Adam Sorini; 1149 Noel Drive; Menlo Park, CA; 94025
- Phone: (206) 375-1145
- Email: asorini@gmail.com, asorini@stanford.edu, asorini@slac.stanford.edu

## EDUCATION

- Ph. D., Physics, December 2008, University of Washington
- M. S., Physics, December 2003, University of Washington
- B. S., with distinction, Physics, December 2001, University of Michigan

## POSITIONS HELD

- Post Doctoral Researcher, January 2009–Present, SLAC/Stanford
- Research Assistant, June 2005–December 2008, University of Washington
- Teaching Assistant, September 2002–May 2005, University of Washington

## RESEARCH ACCOMPLISHMENTS

- I am a developer of the FEFF code [<http://leonardo.phys.washington.edu/feff/>] which is an *ab initio* computer program for calculating x-ray absorption spectra.
- I have collaborated with National Institute of Standards and Technology scientists working on theoretical electron energy loss spectroscopy (EELS). In particular, I have developed a formalism and computer code for calculating macroscopic relativistic dielectric effects on the EELS “magic angle” for anisotropic materials.
- I have developed an *ab initio* method for calculating electronic stopping powers and mean free paths over a wide range of incident energies (from  $\sim 10^2$  eV to  $\sim 10^7$  eV).
- I have calculated the electronic “mixed dynamic form factor” beyond the dipole approximation for use in determining inelastic effects on dynamically diffracted probe electrons.
- I have collaborated with members of the Rehr group at the University of Washington on developing efficient and accurate self-energies for use in the determination of inelastic effects in x-ray absorption.

## RESEARCH INTERESTS

- Many-body theory of real materials and high-powered computing
- XAS and RIXS of iron pnictides
- Finite momentum-transfer EELS and its relation to other spectroscopies

## TEACHING INTERESTS

- I am interested in teaching physics at all levels and would enjoy the opportunity to teach if possible.

## PUBLICATION

- “Evidence for weak electronic correlations in iron pnictides”, W. L. Yang, A. P. Sorini, C-C. Chen, B. Moritz, W.-S. Lee, F. Vernay, P. Olalde-Velasco, J. D. Denlinger, B. Delley, J.-H. Chu, J. G. Analytis, I. R. Fisher, Z. A. Ren, J. Yang, W. Lu, Z. X. Zhao, J. van den Brink, Z. Hussain, Z.-X. Shen, and T. P. Devereaux, *Phys. Rev. B* **80**, 014508 (2009). [Editor’s Choice and Physics Viewpoint article, see *Physics* **2**, 60 (2009)].
- “Reducing radiation damage in macromolecular crystals at synchrotron sources”, E. A. Stern, Y. Yacoby, G. T. Seidler, K. P. Nagle, M. P. Prange, A. P. Sorini, J. J. Rehr, and A. Joachimiak, *Acta. Cryst.*, **D65**, 366 (2009).
- “*Ab initio* theory and calculations of X-ray spectra”, J. J. Rehr, J. J. Kas, M. P. Prange, A. P. Sorini, Y. Takimoto, and F. Vila, *C. R. Physique*, in press (2008).
- “Probe Effects in Low-energy Electronic Excitations of Molecular N<sub>2</sub>”, J. A. Bradley, G. T. Seidler, G. Cooper, A. Hitchcock, A. P. Sorini, K. Schlimmer, K. P. Nagle, et al., in preparation.
- “The Passage of Fast Electrons Through Matter”, A. P. Sorini, Ph. D. dissertation (2008).
- “Magic Angle in Electron Energy Loss Spectra: Relativistic and Dielectric Corrections”, A. P. Sorini, J. J. Rehr, and Z. H. Levine, *Phys. Rev. B* **77**, 115126 (2008).
- “*Ab Initio* Calculations of Mean Free Paths and Stopping Powers”, A. P. Sorini, J. J. Kas, J. J. Rehr, M. P. Prange, and Z. H. Levine, *Phys. Rev. B* **74**, 165111 (2006).
- “Many Pole Model of Inelastic Losses in X-ray Absorption Spectra”, J. J. Kas, A. P. Sorini, M. P. Prange, L. W. Campbell, J. A. Soinen, and J. J. Rehr, *Phys. Rev. B* **76**, 195116 (2007).
- “*Ab Initio* Real Space Calculations of Electron Energy Loss Spectra”, A. P. Sorini, J. J. Rehr, K. Jorissen, *AIP Conf. Proc.* **999**, 47 (2008).
- “Inelastic Losses and Multi-Electron Excitations in X-ray Spectra”, J. J. Rehr, J. J. Kas, M. P. Prange, A. P. Sorini, L. W. Campbell, and F. D. Vila, *AIP Conf, Proc.* **882**, 85 (2007).
- “*Ab Initio* Calculations of Inelastic Losses and Optical Constants”, J. J. Rehr, J. J. Kas, M. P. Prange, F. D. Vila, A. L. Ankudinov, L. W. Campbell, and A. P. Sorini, arXiv:cond-mat:/0601241 (2006) [to be book chapter].

## COMPUTER LANGUAGES

- FORTRAN 77, FORTRAN 90, HTML

## AWARDS

- Oct 2002, Graduate recruitment award, University of Washington
- April 2001, IGERT Summer fellowship, University of Michigan/NSF

**STUDENT SERVICE / STUDENT GROUPS**

- 2005–2006 Physics Graduate Student Council, Student representative on the qualifying exam committee
- Former member and webmaster of the University of Washington Physics “condensed matter journal club”, and have given talks on: ultracold atoms, graphene, superfluids, classical hydrodynamics, quantum computing, superconductors, and polymer physics.