

Adam Sorini–Résumé

CONTACT INFO

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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

- 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
- Relativistic effects in condensed matter physics
- 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

- “*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 N₂”, J. A. Bradley, G. T. Seidler, G. Cooper, A. Hitchcock, A. P. Sorini, K. Schlimmer, K. P. Nagle, et al., in preparation.
- “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. Soininen, 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* Relativistic Calculations of Electron Energy Loss Near Edge Spectra—The New and Improved TELNES2 Program”, K. Jorissen, J. Luitz, A. P. Sorini, and C. Hebert, in preparation.
- “*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
- I am an active member and webmaster of the Physics department’s “condensed matter journal club” and I have given talks on: ultracold atoms, graphene, superfluids, classical hydrodynamics, quantum computing, superconductors, and polymer physics.

HOBBIES

- I enjoy playing the piano and the bass guitar, hiking, riddles, web design, literature, writing short stories and poems and palinodes.
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