Curriculum Vitae of John Bonini

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https://github.com/jrbp

Research Interests

Application and development of computational and data-driven techniques to facilitate the discovery and understanding of functional materials, including ferroelectrics, piezoelectrics, topological insulators and semimetals as bulk, thin films, and heterostructures.

Education

2013-2020 **PhD. in Physics**

Rutgers University, Condensed Matter Theory

Advisor: Karin Rabe

2009-2013 **B.S. in Physics**

Rowan University, Minor in Mathematics, Minor in Computer Science

Articles

2020 **Controlling ferroelectric hysteresis offsets in PbTiO3based superlattices**

S. Divilov, H.C. Hsing, M.H. Yusuf *et al.*

arXiv:2011.06082

Stabilizing hidden room-temperature ferroelectricity via a metastable atomic distortion pattern

J.R. Kim, J. Jang, K.J. Go *et al.*

Nat Commun 11, 4944

Berry Flux Diagonalization: Application to Electric Polarization

J. Bonini, D. Vanderbilt, and K. M. Rabe

Phys. Rev. B 102, 045141

2019 **First-principles bulk-layer model for dielectric and piezoelectric responses in superlattices**

J. Bonini, J. W. Bennett, P. Chandra, and K. M. Rabe

Phys. Rev. B 99, 104107

2011 **Enhanced resonant magnetoelectric coupling in frequency-tunable composite multiferroic bimorph structures**

P. Finkel, J. Bonini, E. Garrity, K. Bussman, J. Gao, J. F. Li, S. E. Lofland, and D. Viehland

Appl. Phys. Lett. 98, 092905

Talks

2020 **First principles dielectric slab model for dielectric and piezoelectric response in superlattices**

Fundamental Physics of Ferroelectrics, Tampa, Florida

2019 **Fantastic metastable states and where to find them: A computational search for superlattices with enhanced functional properties**

APS March Meeting, Boston, Massechusetts

First principles dielectric slab model for dielectric and piezoelectric response in superlattices

Symposium of the Laboratory for Surface Modification, Rutgers University

First principles dielectric slab model for dielectric and piezoelectric response in superlattices

Fundamental Physics of Ferroelectrics, Tampa, Florida

2018 **First principles dielectric slab model for dielectric and piezoelectric response in superlattices**

APS March Meeting, Los Angeles, California

2017 **Efficient computation of spontaneous polarization using Wannier center displacements**

APS March Meeting, New Orleans, Louisiana

2016 **Efficient computation of spontaneous polarization using Wannier center displacements**

Fundamental Physics of Ferroelectrics, Washington D.C.

2015 **High throughput density functional theory calculations for predicting new ferroelectrics**

Student Seminars in Physics and Astronomy, Rutgers University

Schools/Workshops Attended

2019 **Workshop on Recent Developments in Electronic Structure**

University of Illinois at Urbana-Champaign

Poster: "Computing spontaneous polarization without sampling a switching path"

2018 **NSF EFRI-2DARE, DMRED-2D & MIP Grantees Meeting**

Pennsylvania State University Materials Research Institute

2017 **International School on Oxide Electronics**

Institut d'Études Scientifiques Cargèse, France

Poster: "Efficient computation of spontaneous polarization using Wannier center displacements"

Workshop on Recent Developments in Electronic Structure

Princeton University

2015 **Machine Learning for Materials Science Workshop**

University of Maryland

2014 **Quantum Espresso Workshop**

Pennsylvania State University

2013 **NJSGC Annual Summer Research Conference**

Rutgers University

Poster: "Engineering the interaction between cold dipolar molecules with external fields to produce novel quantum phases"

2012 **NJSGC Academic Year Fellowship Poster Session**

Rutgers University

Poster: "Design of a system for Elastic, Electric, and Magnetic Properties of Multiferroic Devices "

STEM Symposium

Rowan University

Poster: "Design of a system for Elastic, Electric, and Magnetic Properties of Multiferroic Devices "

Awards

2019 **Best Oral Presentation by student or postdoc (3rd Place)**

Fundamental Physics of Ferroelectrics Workshop

2013 **Excellence Fellowship**

Rutgers University

Medallion for Excellence in Physics

Rowan University

Academic Positions

2020-	**Flatiron Research Fellow** Center for Computational Quantum Physics
2014-2020	**Graduate Assistant** Rutgers University
2014	**Teaching Assistant** Rutgers University
2013-2014	**Graduate Fellow** Rutgers University
2010-2013	**Research Assistant** Rowan University
2010-2012	**Physics and Math Tutor** Rowan University

Computer Skills

Python, HPC, Linux, MongoDB, Git, Bash, Fortran, Lisp, C

References

Karin Rabe

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David Vanderbilt

Board of Governors Professor

Department of Physics and Astronomy, Rutgers University

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Cyrus Dryer

Assistant Professor

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