Nicola A. Spaldin

Publications and Presentations

Books


**JOURNAL PUBLICATIONS (≈ 7000 citations; citations per paper ≈ 70, h = 40)**


Analogies and differences between ferroelectrics and ferromagnets, N. A. Spaldin, Topics in Applied Physics 105, 175 (2007).


First principles study of the multiferroics BiFeO₃, Bi₂FeCrO₆, and BiCrO₃: Structure, polarization, and magnetic ordering temperature, P. Baettig, C. Ederer and N. A. Spaldin, Phys. Rev. B 72, 214105 (2005).


Multiferroic materials tower up, N. A. Spaldin, Physics World 17 (4), 20 (2004).


First principles study of intrinsic defects in (Ga,Mn)As, S. Sanvito and N. A. Hill, J. Mag. Mag. Mat. 242, 441 (2002).


Visualizing the role of Bi 6s “lone pairs” in the off-center distortion in ferromagnetic BiMnO₃, R. Seshadri and N. A. Hill, Chemistry of Materials 13, 2892 (2001).


Influence of the local As antisite distribution on ferromagnetism in (Ga,Mn)As, S. Sanvito and N. A. Hill, Appl. Phys. Lett. 78, 3493 (2001).


Conference Proceedings


INVITED PRESENTATIONS

2010

Electroceramics XII, Trondheim, Norway (Keynote)
Using Density Functional Theory to Design New Materials; Magnetoelectronics and the Origin of the Universe

Materials Department Seminar, ETH, Zurich, Switzerland
Using Density Functional Theory to Design New Materials; Magnetoelectronics and the Origin of the Universe

CECAM Workshop on First-Principles Calculations for Magnetoelectrics, Lausanne, Switzerland
What can first-principles calculations contribute to understanding the toroidal moment in bulk periodic solids
Magnetoelectrics; Whence, why and wither?

MPG FKF Seminar, Stuttgart, Germany
Oxide/Oxide interfaces from first principles; Design and understanding

Joint IFW/PKS Colloquium, Dresden, Germany
Using Density Functional Theory to Design New Materials; Magnetoelectronics and the Origin of the Universe

Materials Department Seminar, KTH, Stockholm, Sweden
Using Density Functional Theory to Design New Materials; Magnetoelectronics and the Origin of the Universe

U. Halle Physics Colloquium, Halle, Germany
Using Density Functional Theory to Design New Materials; Magnetoelectronics and the Origin of the Universe

Uppsala University, Complex Systems Seminar, Uppsala, Sweden
Using density functional theory to design new materials. From nanoelectronics to the origin of the universe

APS March meeting, Portland, OR
A theorist’s-eye view of multiferroics (McGroddy Prize Talk)

Fundamental Physics of Ferroelectrics, Aspen, CO
The role of first-principles calculations in understanding and designing multiferroics

2009

MRS Fall meeting, Boston MA
Oxide/Oxide interfaces from First Principles; Design and Understanding
Yale University MRSEC Colloquium, New Haven, CT
   Using Density Functional Theory to Design New Materials; Magnetoelectronics and the Origin of the Universe

Argonne National Labs., Chicago, IL
   Using Density Functional Theory to Design New Materials; Magnetoelectronics and the Origin of the Universe

European School on Multiferroics, Groningen, Netherlands
   Multiferroics; Recent history, current excitement and future directions

Zernike Institute, U. Groningen, Netherlands
   Using Density Functional Theory to Design New Materials; Magnetoelectronics and the Origin of the Universe

Mott Meeting, Santa Barbara, CA
   Use of first-principles computations in designing and understanding oxide/oxide interfaces

International Conference on Magnetism, Karlsruhe, Germany (Semi-Plenary)
   Novel magnetism at strongly correlated interfaces

Summer School on Materials Modeling from First Principles, Santa Barbara, CA
   (Keynote)
   Using Density Functional Theory to Design New Materials

MRS Spring meeting, San Francisco, CA
   Picozzi-inspired routes to novel magnetoelectrics

Materials Department Colloquium, Iowa State University, Ames, IA
   How do we use computational methods to design new materials?

2008

ICMR/ICMS Winter School on Novel Oxide and Carbon Materials, Bangalore, India
   Why oxides are interesting and hard to calculate (and why these are related)

MRS Fall meeting, Boston, MA
   New routes to electric field control of magnetism

UCSB Physics Graduate Student Seminar, Santa Barbara, CA
   How do we use computational methods to design new materials?

Colloquium, CIMAV National Lab., Chihuahua, Mexico
   Recent progress in single phase multiferroics

NanoFerronics-2008, Jülich, Germany
   Recent progress in single phase multiferroics
Workshop on Ordering Phenomena in Transition Metal Oxides, Augsburg, Germany
  *Towards a microscopic theory of toroidal moments in periodic crystals*

Physics Department Colloquium, Harvey Mudd College, Claremont, CA
  *How do we use computational methods to design new materials?*

Gordon Conference on Correlated Electrons, Biddeford, ME
  *New routes to electric field control of magnetism*

Ehrenfest Colloquium, Lorentz Institute, Leiden, Netherlands
  *New routes to electric field control of magnetism*

European MRS meeting, Strasbourg, France
  *New routes to electric field control of magnetism*

Materials Colloquium, U. Washington, Seattle
  *New routes to electric field control of magnetism*

Physics Colloquium, U. Frankfurt
  *New routes to electric field control of magnetism*

NordinSpin 08, Gimo Herrgard, Sweden
  *New routes to electric field control of magnetism*

APS meeting, New Orleans, LA
  *Towards a microscopic theory of toroidal moments in bulk, crystalline solids*

TMS meeting, New Orleans, LA
  *Exploiting oxide interfaces to generate new functionalities*

Indo-Japan Workshop on New directions in ferroics and multiferroics, Kolkata, India
  *Progress and prospects in magnetoelectrics and multiferroics*

Materials Colloquium, UC Santa Barbara
  *New routes to electric-field control of magnetism*

ISIS Colloquium, UC Irvine
  *New routes to electric-field control of magnetism*

2007

Angstrom Laboratory, Uppsala University, Sweden
  *Progress and prospects in multiferroics and magnetoelectrics*

Jawaharlal Nehru Center for Advanced Scientific Research, India
  *Multiferroics and magnetoelectrics*

CNSI seminar, UCLA
  *Design of new magnetoelectrics and multiferroics*
Zernike Institute Colloquium, U. Groningen, Netherlands  
*Progress and prospects in multiferroics and magnetoelectrics*

The National Academies, Irvine, CA  
*Grand challenges in oxides research*

Northwestern University, Materials Colloquium  
*Progress and prospects in multiferroics*

International Conference on Electroceramics, Arusha, Tanzania (*Plenary*)  
*Progress and prospects in multiferroics*

Pan American Advanced Study Institute on Electronic States and Excitations on Nanostructures, Zacatecas, Mexico  
*Multiferroics and magnetoelectrics*

International Symposium on Correlated Electron Systems, Akihabara, Japan  
*Alternative mechanisms for the magnetoelectric effect*

International Symposium on Integrated Ferroelectrics, Bordeaux, France  
*First principles calculations for metal-ferroelectric interfaces*

University of Bonn, Physics Colloquium  
*Computational design of contra-indicated multifunctional materials*

MRS Spring meeting, San Francisco, CA  
*Ab initio calculations of complex oxide interfaces*

iDFT07, Laguna Beach, CA  
*Electric fields in DFT calculations; problems and solutions*

EMMA MURI Review, Berkeley, CA  
*The dielectric dead layer in nanoscale capacitors: existence, origin, mitigation and exploitation*

Lawrence Berkeley Labs. Seminar  
*Progress and prospects in multiferroics*

Washington University at St. Louis, Physical Chemistry Seminar  
*Computational design of contra-indicated multifunctional materials*

Caltech, Materials Colloquium  
*Computational design of contra-indicated multifunctional materials*

Rensselaer Polytechnic Institute, Materials Colloquium  
*Computational design of contra-indicated multifunctional materials*

IBM Almaden, Seminar  
*Progress and prospects in multiferroics: A theorist’s perspective*
First-principles design of contra-indicated multifunctional materials

Physics and Chemistry of Semiconductor Interfaces, Salt Lake City, UT
Ab initio calculations for complex oxide interfaces

2006

Materials Research Society Fall Meeting, Boston, MA
Progress in thin film multiferroics
First principles calculations for nanoscale capacitors

California Condensed Matter Theory Meeting, Santa Barbara, CA
Progress and prospects in multiferroics: A theorist’s perspective

University of Central Florida, Physics Colloquium
Computational design of contra-indicated multifunctional materials

Florida State University, Materials Colloquium
Computational design of contra-indicated multifunctional materials

Magnetic Nanostructures Gordon Conference, Oxford, UK
Progress and prospects in multiferroics: A theorist’s perspective

Solid State Chemistry Gordon Conference, New London, NH
Computational design of contra-indicated multifunctional materials

Workshop on Computational Materials Theory, Bangalore, India
Computational design of contra-indicated multifunctional materials

Summer School on Electronic Structure Methods, Bangalore, India
Introduction to functional materials

International Symposium on Structure-Property Relationships in Solid State Materials, Bordeaux, France
Progress in magnetoelectric multiferroics

UC Santa Barbara, Physical Chemistry Seminar
Computational design of contra-indicated multifunctional materials

University of Toronto, Canada, Condensed Matter Physics Seminar
Why are there so few magnetic ferroelectrics?

Frontiers in Inorganic Materials Chemistry, Santa Barbara, CA
Contra-indicated multifunctional materials: Intelligent design, creation and evolution
Oak Ridge National Labs., Oak Ridge, TN, Center for Nanomaterials Colloquium
*Computational design of new multiferroics*

Louisiana State University, Baton Rouge, LA, Physics Colloquium
*Why are there so few magnetic ferroelectrics?*

2005

Stanford University, CA, Materials Colloquium
*Why are there so few magnetic ferroelectrics?*

Workshop on Oxide Electronics, Cape Cod, MA
*Progress in magnetoelectric multiferroics*

Ψk Conference, Schwabisch Gmünd, Germany
*Density functional studies of multiferroics*

Fritz-Haber Institute, Berlin, Germany
*Computational design of contraindicated multifunctional materials*

American Chemical Society National Meeting, Washington, DC
*Computational design of contraindicated multifunctional materials*

Telluride Workshop on Physics of Novel Oxides, Telluride, CO
*Density functional studies of multiferroics*

Czech Academy of Sciences, Prague, Czech Republic
*Computational design of new multiferroics*

National Academy of Sciences Frontiers of Science Symposium, Irvine, CA
*Computational design of multifunctional materials*

UC Santa Cruz, Chemistry Dept. Inorganic Seminar
*Computational design of new multifunctional materials*

International Workshop on Prospects in Magnetic Oxides, Fontevraud, France
*Density functional studies of multiferroics*

APS March meeting, Los Angeles, CA
*Density functional studies of multiferroics*

Conference on Fundamental Physics of Ferroelectrics, Williamsburg, VA
*Recent developments in multiferroics*

Materials Research Outreach Symposium, UCSB
*Designing new multifunctional materials and violating some laws of physics and chemistry*
Science and Engineering Council of Santa Barbara  
*Chemical design of new multifunctional materials*

2004

Los Alamos National Labs.  
*Can an electric field reverse a spontaneous magnetization?*

MRS Fall meeting, Boston, MA  
*Computational design of multifunctional oxides.  
Origin of ferromagnetism in novel spintronic oxides*

Workshop on Predictive Capabilities for Strongly-Correlated Systems, Oak Ridge, TN  
*Comparison between different functionals for transition metal oxides*

American Vacuum Society International Symposium, Anaheim, CA  
*Computational design of multifunctional electronic materials*

NSF Workshop on Materials Theory, Arlington, VA  
*Ab initio design of new multifunctional materials*

UC Berkeley, Solid State Physics Seminar  
*Computational design of new multifunctional materials*

UCSB/Oxford Workshop on Advanced Materials, Oxford, UK  
*Computational design of new multifunctional materials*

Inorganic Materials in the UC system, UCSB  
*A theorist’s-eye view of MRL collaborations: How to persuade people to grow your materials*

UCLA, Mechanical Engineering Dept. Seminar  
*Computational design of new multifunctional materials*

NSF/ITR Workshop, UIUC, IL  
*Computational design of new multifunctional materials*

ABINIT Electronic Structure Workshop, Paris, France  
*Organizing software development for computational design of new materials*

University of Houston, Chemistry Dept. Colloquium  
*Computational design of new multifunctional materials*

Columbia University, Physics Dept. Seminar  
*Computational design of new multifunctional materials*

Rutgers University, Chemistry Dept. Colloquium  
*Computational design of new multifunctional materials*
NSF/EC Workshop on Computational Materials, San Francisco, CA  
*Computational design of new spintronic materials*

TMS Annual Meeting, Charlotte, NC  
*Computational design of new spintronic materials*

TMS Annual Meeting, NSF-sponsored panel on Future of Metals, Charlotte, NC  
*Designer approaches to multifunctional metals*

UCSB/MPI Workshop on Advanced Materials, Santa Barbara, CA  
*Computational design of new multifunctional materials*

2003

University of Washington, Seattle, Materials Dept. Colloquium  
*Why are there so few magnetic ferroelectrics?*

Fall Meeting of the American Ceramic Society, Oakland, CA  
*Computational design of new magnetic ferroelectrics*

Magnetoelectric Interaction Phenomena in Crystals V, Sudak, Ukraine  
*Why are there so few magnetic ferroelectrics?*

Chemistry of Electronic Materials Gordon Conference, New London, CT  
*Computational design of multiferroics*

University of Lancaster, Physics Dept. Colloquium  
*New materials for nanospintronics*

Cambridge University, Theory of Condensed Matter Seminar  
*Who I am, where I come from, what I do and where I am going*

Accelrys Inc., Cambridge, U.K.  
*Computational design of new materials*

Cambridge University, Materials Dept. Seminar  
*Why are there so few magnetic ferroelectrics?*

TU Dresden, Chemistry Dept. Seminar  
*Computational design of multiferroics*

University of Lancaster, Physics Dept. Seminar  
*Self-interaction corrections and why we need them (sometimes)*

Cambridge University, Physics Dept. Seminar  
*Why are there so few magnetic ferroelectrics?*

Cambridge University, Earth Sciences Seminar  
*Self-interaction corrections and why we need them (sometimes)
Trinity College, Dublin, Physics Dept. Colloquium
*Computational design of new magnetic materials*

Condensed Matter and Materials Physics Conference, Belfast, Ireland
*A new mechanism for ferroelectricity and a new ferroelectric with an old mechanism*

International Symposium on Integrated Ferroelectrics, Colorado Springs, CO
*Computational design of new multiferroics*

Conference on Fundamental Physics of Ferroelectrics, Williamsburg, VA
*A new mechanism for ferroelectricity and a new ferroelectric with an old mechanism*

Michigan State University, Physics Dept. Seminar
*Computational design of new magnetic materials*

2002

University of Michigan, Ann Arbor, Materials Dept. Colloquium
*Computational design of new magnetic materials*

Solid State Chemistry Gordon Conference, New London, NH
*Computational design of new spintronic materials*

UC San Diego, Physics Dept. Seminar
*New materials for nanospintronics*

CNRS Workshop on Advanced Materials, Paris, France
*New materials for nanospintronics*

MRS Spring meeting, San Francisco, CA
*Computational design of new multiferroic perovskites*

APS March meeting, Indianapolis, IN
*Computational design of new multiferroic materials*

National Science Foundation IGERT P.I. Workshop, Washington, DC
*Interdisciplinary graduate education at UCSB: Mentoring and Diversity*

Hughes Research Labs., Malibu, CA
*Pushing the limits of electronic structure theory; Can we design new spintronic materials?*

2001

California State University, Northridge
*Why are there so few magnetic ferroelectrics?*
EPFL-ETHZ-UCSB-WIS Workshop on Advanced Materials, Cret-Bérard, Switzerland  
Why are there so few magnetic ferroelectrics?

EPFL, Switzerland  
Why are there any magnetic ferroelectrics?

University of Fribourg, Switzerland  
First principles prediction of diferroism in BiCrO₃

CNRS, Grenoble, France  
Why are there so few magnetic ferroelectrics?

Joint European Magnetism Symposium, Grenoble, France  
Why are there any magnetic ferroelectrics?

Los Alamos National Lab.  
Why are there so few magnetic ferroelectrics?

Spintronics 2001, Georgetown  
Pushing the limits of electronic structure theory; can we design new spintronic materials?

ICTP/UCSB/TWAS workshop, Trieste, Italy  
Pushing the limits of electronic structure theory; Can we design new spintronic materials?

Corning Incorporated  
Spintronics Materials Research at UCSB

ACS Spring meeting, San Diego, CA  
Design of new multiferroic materials using computational solid state chemistry

San Diego State University, Physics Dept. Colloquium  
Why are there so few magnetic ferroelectrics?

2000

Pakistan Physical Society’s 8th National Symposium on Frontiers in Physics, Lahore  
First principles study of two magnetic ferroelectrics

IIT Delhi, Dept. of Chemistry Seminar  
Why are there so few magnetic ferroelectrics?

Jawaharlal Nehru Center for Advanced Scientific Research  
Why are there so few magnetic ferroelectrics?

Jawaharlal Nehru Center for Advanced Scientific Research  
New materials for Nanospintronics
Why are there so few magnetic ferroelectrics?

Multiferroism and magnetoresistance in manganites - a new class of materials for magnetic data storage?

Multiferroism and magnetoresistance in manganites - a new class of materials for magnetic data storage?

Multiferroism and magnetoresistance in manganites - a new class of materials for magnetic data storage?

First principles investigation of ferromagnetic ferroelectric BiMnO$_3$ - a new perspective on the perovskite manganites

First principles investigation of ferromagnetic ferroelectric BiMnO$_3$ - a new perspective on the perovskite manganites

First principles study of ferromagnetic ferroelectrics
Fachbereich Physikalische Chemie der Phillips-Universität Marburg, Germany
First-principles design of new materials for magnetic data storage

NIST Center for Theoretical and Computational Materials Science
Bismuth manganite - the ferromagnetic ferroelectric perovskite

1996
University of California at Santa Barbara, Materials Department
Calculating the electronic properties of semiconductor nanostructures

1995
AT&T Bell Laboratories
Calculating the electronic properties of semiconductor nanostructures

College of William & Mary, Applied Sciences Dept. Seminar
Calculating the electronic properties of semiconductor nanostructures

California Institute of Technology, Applied Physics Seminar
Calculating the electronic properties of nanometer-sized semiconductor structures