

**Research and Professional Experience:**

2013 - present	Assistant Professor of Physics at New Mexico State University
2013 - present	LANLSC Professor of Physics at Los Alamos National laboratory
2015 - 2016	LANL Rosen Fellow
2010 - 2013	Postdoctoral Fellow, Physics Department, UC San Diego
2007 - 2010	Research Assistant Scientist, ANKA Synchrotron Radiation Facility, KIT – Germany
2008 - 2010	Graduate PhD Assistant Scientist, University of Freiburg, Germany
2005 - 2007	M.Sc Research Assistant in physics, Institute of Physics, St Petersburg State Polytechnic University, Russia
2001 - 2005	Undergraduate Research Assistant in Physical Electronics, Institute of Physics, St Petersburg State Polytechnic University, Russia

**Education:**

2007 - 2010	<b>Dr. rer. nat. Physics &amp; Materials Science</b> (Summa cum-laude), Universität Freiburg, Germany. Thesis Title “Strain field and strain engineering in semiconductor nanostructures: coherent X-ray diffraction imaging and analytical studies”. Advisors: Prof. Dr. Arne Croell, Prof. Dr. Tilo Baumbach (KIT).
2005 - 2007	<b>M.Sc, Applied Physics- Physical Electronics</b> , St. Petersburg State Polytechnic University, Russia. Thesis Title “Design of Electrostatic Energy Analyzer with Cylindrical Focusing Field”. Advisor: Prof. A. A. Matyshev.
2001 - 2005	<b>B.Sc, Applied Physics – Physical Electronics</b> , St. Petersburg State Polytechnic University, Russia. Thesis Title “Numerical-Analytical Computation of Electrostatic Potential in Six Electrode Energy Analyzer”. Advisor: Prof. A. A. Matyshev.

**Award and Honors:**

2015- 2016	Los Alamos National Laboratory’s Rosen Professor Fellowship
2013	Carl Storm Underrepresented Minority Award for the Gordon Research Conference & Workshop on X –ray Science
2013	Cornel High Energy Recovering Linac (ERL) Science at the Hard X-ray Diffraction Award for Postdoctoral Fellow
2007	Samsung Electro-mechanics Thesis Edge Awards, 2 <sup>nd</sup> Place

- 2001-2007 Russian Federation Ministry of Education and Science undergraduate Tuition & financial Stipendium Scholarship Award
- 2001-2007 Scholarship from the Ministry of Higher Education, Russia-Cameroon Cooperation

**Professional Referee in Peer-reviewed Journals:**

- Advanced Materials, Physical Review B, Nature Scientific Reports (2016 – present)
- The Journal of Physical Chemistry Letters (2016 – present)
- Physica Status Solidi (RRL) (2015 – Present)
- Journal of Applied Physics, Applied Physics Letters (2014 – Present)
- Optics Express (2013 – Present)
- Journal of Materials Science and Engineering B (2014 – Present)
- Physical Review B (2011 – Present)
- Acta Crystallographic (2010 – Present)
- Journal of Applied Crystallography (2010 – Present)
- Journal of Synchrotron Radiation (2010 – Present)

**Professional Service:**

- National Synchrotron Light Source (NSLS-II) Bragg Coherent Diffraction Beamline Development Proposal team (2015 – present).
- Atomic, Molecular and Optical Physics Session chair, Joint Meeting of the Four Corners and Texas Sections of the American Physical Society (October 21–22, 2016).
- Quantum condensed matter division’s Young Investigators Program for Instrument upgrades at SNS and HIFR of Oakridge National lab. (2016 – present)
- MaRIE Science Review Committee member (2015 – present).
- Oakridge National Laboratory (ORNL) Beamtime Proposal Science Review Committee member (2015 – present).
- Guest Editor, Coherent Diffractive Imaging Special Issue of Journal of Optic (2015 – present).
- SLAC-LCLS-II Magnetism & Spin Dynamics Working Group (2015 – present).
- NMSU Physics Depart. Recruiting & Retention Committee (2014 – present).
- Gardiner Lectureship Committee (2015 – present).
- Exchange Bias Session Chair, 58<sup>th</sup> Annual Conference on Magnetism and Magnetic Material (MMM) in Denver, Colorado (Nov 04- 06, 2013).
- Co-chair 11<sup>th</sup> LANSCE School on Mesoscale science (Feb 2015).
- Conferences related to Physics Education and Recruiting of STEM majors (AAPT, APS) (Fall 2013).

- Facility mentor of several summer students in scattering and Imaging with synchrotron radiation for material science, ANKA-KIT Germany (2008-2010).

### **Invited Oral Presentations:**

- **Pair Distribution Neutron Scattering to Study Topological Defects in Hexaferrites.** 2017 Joint Nanoscience and Neutron Scattering User Meeting: Oak Ridge National Laboratory, Oakridge TN-, August 1<sup>st</sup> – August 5<sup>th</sup> 2017.
- **Bragg Coherent Diffractive Imaging of Topological Defects in Hexaferrites: Workshop2:** Even Small Wavelengths, When Bright Enough, Have Big Data Problems. The 2017 Advance Photon Source/Center for Nanoscale Materials Users Meeting Argonne, Lemont IL-, May 08<sup>th</sup> – May 11<sup>th</sup> 2017.
- **Technology development for multimodal x-ray imaging of Materials:** *Symposium Characterization of Materials through High Resolution Coherent Imaging. 2017 TMS Annual Meeting & Exhibition. San Diego-CA, Feb 2b<sup>th</sup> – March 2<sup>nd</sup> 2017.*
- **Analysis of Topological Defects in Multiferroic:** *Joint Meeting of the Four Corners and Texas Sections of the American Physical Society (October 21–22, 2016)*
- **Birefractive coherent diffractive imaging: novel probe for magneto-electric phases:** *SPIE - Spintronics-IX, Spin-Orbit Coupling Session: Optics & Photonics Conference, San Diego-CA, August 28<sup>th</sup> –September 1<sup>st</sup> 2016.*
- **Probing of Electronic and Magnetic Phases Using Neutron Scattering:** *Young Researchers Meeting, Oak Ridge National Laboratory, Oak Ridge -TN, August 18<sup>th</sup> – 19<sup>st</sup> 2016.*
- **Lens-Less Microscopy at Coherent Light Sources:** *Physics and Theory Colloquium Series, Los Alamos National Laboratory, NM. August 11<sup>th</sup> 2016.*
- **Towards Sub-nanometer Magnetic Imaging: Coherent Diffraction Imaging Techniques at Light Sources:** *Opportunities for New X-Ray Sources to Shed Light on Mesoscale Functional Materials, Santa Fe, NM. July 21<sup>th</sup> -22<sup>nd</sup> 2016.*
- **Coherent diffraction imaging Techniques at 3<sup>rd</sup> and 4<sup>th</sup> generation light sources:** *LANL Workshops on Decadal Challenges of Materials Science and on MaRIE-related*

*Science and Technology. Data Science Optimal Learning for Materials Discovery, Santa Fe, NM. May 16<sup>th</sup> -18<sup>st</sup> 2016.*

- **In Operando Mapping of Magneto-electric Coupling Effects using Coherent Diffraction Imaging:** *Physics Colloquium & Seminar, Virginia Tech, Blacksburg Virginia, March 28<sup>th</sup> 2016.*
- **Non-Linear Optical and Magneto-electric Effects across Interfaces:** *Karlsruhe Nano Micro Facility (KNMF), Karlsruhe-Germany, March 1<sup>th</sup>- 2<sup>nd</sup> 2016.*
- **Non-Linear Optical Effects across Magneto-electric Interfaces:** *Karlsruhe Institute of Technology IMT, Karlsruhe-Germany, Feb. 4<sup>th</sup>- 6<sup>nd</sup> 2016.*
- **Multiple Twinned Nanoparticles and Intercalated Nanosheets: Nanostructure Studies Beyond the Unit Cell:** *2015 American Crystallographic Association, Annual Meeting & Exhibit, Philadelphia, PA, July. 25<sup>th</sup>- 29<sup>th</sup> 2015.*
- **Contrôle optique du Découplage d'Antennes Supraconductrices pour l'IRM haute Sensibilité CODASIS:** *Colloque du défi Instrumentation aux limites – CNRS, Paris, 9 Avril 2015*
- **Charge and Strain Control of interface Magnetism:** *2015 MRS Spring Meeting & Exhibit, San Francisco, CA, April. 6<sup>th</sup>- 10<sup>th</sup> 2015.*
- **Observing Nanoscale Magnetostriction with Coherent X-rays in DC and Pulsed Magnetic Fields:** *2015 TMS Annual Meeting & Exhibition, Orlando, FL, March. 16<sup>th</sup> 2015.*
- **Science with Neutron and Coherent X-ray Scattering at the Frontier of High Magnetic Fields:** *Conference on Neutron Scattering in Magnetic Fields Above 15 Tesla, Helmholtz-Zentrum Berlin für Materialien und Energie 29<sup>th</sup> 30<sup>th</sup> October 2014.*
- **3D Imaging of Ferroelectric Domain Structure in PZT Thin Film-Based Capacitors by Coherent X-Ray Bragg Projection Ptychography:** *21st International workshop on oxide electronics (IWOE-21), Bolton Landing, NY from Sep. 28<sup>th</sup>- Oct. 1<sup>st</sup> 2014.*
- **X - ray Nanovision: Probing the Ultra-small and Capturing the Ultrafast:** *Annual Meeting of the Four Corners Section of the APS, Orem, Utah, October 17<sup>th</sup> 2014.*

- **X - ray Nanovision: Probing the Ultrasmall and Capturing the Ultrafast:** *CINT Seminar Series, Los Alamos National Laboratory, Los Alamos, NM, July 24<sup>th</sup> 2014.*
- **Qualitative Analysis of Emergent Magnetoelectric Phases:** *Seminar Series, LANSCE- Los Alamos National Laboratory, Los Alamos, NM. March 25<sup>th</sup> 2014.*
- **Emergent Phases in Functional Ferroelectrics:** *CNRS, Universite Paris-Sud, Paris, France, Feb 2<sup>nd</sup> 2014.*
- **Coherent X-ray Diffraction Imaging from Nanostructures:** *Gordon Research Conference on X-ray Science, Easton, Boston, US, August 4– 9 2013.*
- **Imaging of Strain and Disclinations in Gold Nanostructures:** *Coherent X-ray Diffraction Imaging approach. International French- US Workshop, Center For Magnetic Recording, ICSD, San Diego, CA, USA. July 8– 12 2013.*
- **Nanoscale Probing of Magnetism in Complex Nanostructures:** *Physics Department, New Mexico State University, Las Cruces NM, USA. Feb. 14, 2013.*
- **Nanoscale Probing of Magnetism in Complex Nanostructures:** *Los Alamos Neutron Scattering Center, Los Alamos, NM, USA. Feb, 11, 2013.*
- **Probing of ferroic Phases in nanoscale magnetoelectric nonvolatile devices:** *CNRS, Universite Paris-Sud, Paris, France. January 29 2013.*
- **Probing of ferroic Phases in nanoscale magnetoelectric nonvolatile devices:** *Advanced Light Source, COSMIC workshop, ALS users Meeting, Berkley, CA, USA. 7<sup>th</sup> – 12<sup>th</sup> October 2012*
- **Coherent Probes for strain in device nanostructures analysis:** *Swiss Light Source (SLS), Paul Scherrer Institute, PSI May 2010.*
- **New approaches for strain field Investigations in crystals with the aid of X-ray analysis:** *2<sup>nd</sup> School and Workshop on X-ray Micro and Nanoprobes (XMNP 2009), Palinuro (Salerno - Italy). June 14th to 22nd, 2009*
- **Phase retrieval and its applications to imaging:** *7<sup>th</sup> Autumn School on X-Ray Scattering from Surfaces and Thin Layers; Smolenice, Slovakia. 4<sup>th</sup> to 6<sup>th</sup> October, 2007*

- **Internal X-Ray course (Invited lecture):** *Institut für Synchrotronstrahlung (ISS)* by Prof. T. Baumbach, October to December 2007

**Contributed Presentations:**

- **Nanoscale Imaging and Tracking of Vortex Dynamics in a Single Ferroic Nanoparticle.** COHERENCE WORKSHOP 2017. PETRA IV, Hamburg Germany, June 26 – June 28, 2017.
- **Small Particles and even Bigger Data Problems in Bragg Coherent Diffractive Imaging** Poster session: Even Small Wavelengths, When Bright Enough, Have Big Data Problems. The 2017 Advance Photon Source/Center for Nanoscale Materials Users Meeting Argonne, Lemont IL-, May 08<sup>th</sup> – May 11<sup>th</sup> 2017.
- **X-Ray Diffraction and Partial Distribution Function Analyses on Barium Hexaferrite:** *Joint Meeting of the Four Corners and Texas Sections of the American Physical Society (October 21–22, 2016);*
- **Iterative Phase Retrieval Coherent Diffraction Imaging Algorithm:** *Joint Meeting of the Four Corners and Texas Sections of the American Physical Society (October 21–22, 2016);*
- **First-Principle Study of the La<sub>0.67</sub>Sr<sub>0.33</sub>MnO<sub>3</sub>/PbZr<sub>0.2</sub>Ti<sub>0.8</sub>O<sub>3</sub> (001) Interface:** *Joint Meeting of the Four Corners and Texas Sections of the American Physical Society (October 21–22, 2016);*
- **Magneto-electric Effects across Interfaces:** *Bates College in Lewinston, USA, Gordon Research Conference on Multiferroic & Magnetoelectric Materials, August 7<sup>th</sup>- 12<sup>nd</sup> 2016;*
- **In-situ experimental setup to study magneto-electric effects in a single nanoparticle using Bragg coherent diffraction imaging:** *Le Grand Large - Saint-Malo, France. The International Workshop on Phase Retrieval and Coherent Scattering. June 7<sup>th</sup>- 10<sup>th</sup>, 2016;*
- **Magnetoelectric Coupling Characteristics of the La<sub>0.67</sub>Sr<sub>0.33</sub>MnO<sub>3</sub>/PbZr<sub>0.2</sub>Ti<sub>0.8</sub>O<sub>3</sub> (001) Interface.** *Presentation in Bulletin of the American*

*Physical Society, APS March Meeting 2016. Baltimore, MD, USA. March 14<sup>th</sup> – March 18<sup>th</sup> 2016;*

- **Imaging of Biological Tissues by Visible Light CDI** by Dmitry Karpov, Tomy dos Santos Rolo, Hannah Rich and E. Fohtung. *Presentation in Bulletin of the American Physical Society, APS March Meeting 2016, Baltimore, MD, USA. March 14<sup>th</sup> – March 18<sup>th</sup> 2016;*
- **Interstitial Functionalization in elemental Si** by Boris Kiefer and E. Fohtung. *Presentation in Bulletin of the American Physical Society, APS March Meeting 2016, Baltimore, MD, USA. March 14<sup>th</sup> – March 18<sup>th</sup> 2016;*
- **Mapping of Strain Inhomogeneity within a Single Ni-NiO Core-Shell Nanoparticle using Bragg Coherent Diffraction Imaging.** *Presentation in Bulletin of the American Physical Society, APS March Meeting 2016 Volume 60, Number 1. San Antonio, Texas, USA. March 2<sup>nd</sup> – March 4<sup>th</sup> 2015;*
- **Magnetostriction at the Nanoscale: Coherent X-ray Diffraction Imaging Approach.** *Poster presentation in ESRF Users' Meeting 2014 & Associated Workshop Research. Grenoble, France. Feb 3– 5 2014;*
- **Coherent X-ray Diffraction Imaging from Nanostructures.** *Annual Meeting, Session on Nanomaterial Structure from Diffraction Data. Honolulu, Hawaii, USA. July 20– 24 2013;*
- **Coherent Diffraction Imaging of Strain Devices Nanostructures.** *APS March Meeting 2013 Volume 56, Number 1. Baltimore, Maryland, USA. February 27– March 2 2013;*
- **Probing of Strain Mediated Hybrid Multiferroic Devices.** *Presentation in Bulletin of the American Physical Society, APS March Meeting 2012, Volume 56, Number 1. Boston, Massachusetts, USA. February 27– March 2 2012;*
- **Probing of hybrid multiferroic memory device nanostructures: Science at the Hard X-ray Diffraction Limit XDL2011 Workshop 1- Diffraction Microscopy, Holography and Ptychography using Coherent Beams.** *Robert Purcell Conference Center, Cornell University, Ithaca NY, USA. June 6 & 7, 2011;*

- **Mapping of Strain and Induced Polarization in GaMnAs/GaAs nanowires.** *Bulletin of the American Physical Society, APS March Meeting 2011* Volume 56, Number 1. Dallas, Texas, USA. March 21–25, 2011;
- **Mapping of Strain in periodic nanowires.** *International Workshop on Phase Retrieval and Coherence 2010, Rostock, Germany.* 8<sup>th</sup> -11<sup>th</sup> June 2010;
- **Grazing incidence coherent diffraction imaging.** *ANKA Graduated School and Brainstorming on Coherent X-ray Imaging, Karlsruhe, Germany.* May 19, 2010;
- **Strain Engineering with the aid of coherent diffraction imaging:** *Deutsche Tagung fuer Forschung mit Synchrotronstrahlung, Neutronen und Ionenstrahlen, Berlin, Germany.* 24<sup>th</sup> to 26<sup>th</sup> February, 2010;
- **Tension in the nanoworld: Elasticity driven strain engineering in semiconductor nanostructures with the aid of X-ray analysis.** *Workshop X-ray coherent diffraction, Soleil, France,* 14-16 December 2009;
- **Investigation of Coupled Mechanical/Electric Effects of Strained Semiconductor Quantum Structures,** *IEEE Nano 2009: Genoa, Italy.* July 26–30, 2009;
- **Coherent diffraction imaging of strain in crystals.** *9th Biennial Conference on High Resolution X-Ray Diffraction and Imaging, Linz, Austria.* 15-19 September 2008;
- **Investigation of deformation fields in crystals by X-ray diffraction using direct methods (Poster presentation).** *Workshop on X-ray Micro Imaging of Materials, Devices and Organism. IEEE NSS/MIC 2008: Dresden Germany.* June 22nd to 24th, 2008;
- **New Classes of Spherical-Toroidal Electrostatic Energy Analyzers,** *Society of Vacuum coaters, 2007 TechCon;*
- **Analytical calculation of electrostatic field potential of electrode systems enabling a separation of variables in cylindrical coordinates.** *8<sup>th</sup> All Russian Seminar on Problems of Theoretical and Applied Electron Optics: Moscow Research Development and Scientific center- ORION, Russia.* May 29<sup>th</sup>- 31<sup>st</sup>, 2007.