

JAIME A. FERNANDEZ-BACA

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SUMMARY

Jaime A. Fernandez-Baca is a Distinguished Research Staff member and the Leader of the Triple Axis Spectroscopy group at the Oak Ridge National Laboratory (ORNL). He received his Ph.D. in Group Physics from the University of Maryland-College Park in 1986, working on the spin dynamics of amorphous Invar alloys. He then became a post-doc at ORNL's Solid State Division, where he became a research staff member. He is now the Leader of the Triple Axis Spectroscopy team at ORNL's Neutron Scattering Division. He has over 30 years of experience in the study of the magnetic ordering and spin dynamics of complex oxides and related alloys utilizing neutron scattering techniques. His most recent research interest is in ultrahigh resolution spectroscopy in quantum materials using neutron Larmor precession techniques. Fernandez-Baca is a Fellow of the American Physical Society and the Neutron Scattering Society of America.

EDUCATION

Ph.D., Physics, 1986, University of Maryland, College Park, MD
M.S., Physics, 1982, University of Maryland, College Park, MD
B.S., Physics, 1977, Universidad Nacional de Ingenieria, Lima, Peru

RESEARCH INTEREST

Magnetic ordering and spin dynamics of complex oxides and related alloys utilizing neutron scattering techniques.

PROFESSIONAL POSITIONS

- Distinguished Research Staff, ORNL, Quantum Condensed Matter Division/Neutron Scattering Division (2013-present)
- UT-ORNL Joint Faculty Professor, Department of Physics and Astronomy (2014-2019)
- Senior Research Staff, ORNL, Solid State Division/Neutron Scattering Science Division/Quantum Condensed Matter Division (1999-2013)
- Adjunct Professor, Department of Physics and Astronomy, University of Tennessee, Knoxville (2003-2013)
- Research Staff, ORNL, Solid State Division, 1990-1998
- Research Associate, ORNL, Solid State Division, 1986-1989

PROFESSIONAL ACTIVITIES

- Leader, Triple Axis Spectroscopy Team/Group, Neutron Scattering Division (2019-present). *Focus on developing/mentoring junior staff, promoting instrument upgrades, implementing novel Larmor precession techniques, supporting and expanding neutron scattering user program.*
- Leader, Triple Axis Spectroscopy Group, Neutron Scattering Sciences Division/Quantum Condensed Matter Division (2006-2017).
- Author/coauthor of over 160 technical articles. h-index = 33.

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- Presented 42 invited lectures at national and international technical conferences, and 33 technical seminars and tutorials at national and international academic institutions.
- Participated in three funded ORNL Laboratory Directed Research and Development (LDRD) projects:
 - “Time-Resolved Phase Analysis in Advanced Materials under High Magnetic Fields using Neutrons” G. M. Ludtka (PI), G. Mackiewicz-Ludtka, C. R. Hubbard, J. B. Wilgen, R. A. Kisner, J. A. Fernandez-Baca (2007-2008)
 - “Development of novel neutron spin-echo methods for ultra-high resolution spectroscopy at ORNL”, J. A. Fernandez-Baca (PI), G. Ehlers, W. A. Hamilton, A. D. Christianson, Steve Parnell, Fankang Li, Roger Pynn (2015-2016)
 - “Probing quantum entanglement using neutron scattering and magnetic Wollaston Prisms”, J. A. Fernandez-Baca (PI), Andrew Christianson, Fankang Li, Benjamin Lawrie, Roger Pynn, Gerardo Ortiz, Fei Li (2019-2020).
- Service to the scientific community/professional societies:
 - Elected member of the Executive Committee (Secretary/Treasurer) of the APS Topical Group on Magnetism and its Applications (GMAG) 2020-2023.
 - Elected member of the Executive Committee (Membership Secretary) of the Neutron Scattering Society of America 2009-2012.
 - Member of the Los Alamos National Laboratory (LANL) Search Committee for the Leader of the Lujan Neutron Scattering Center (2011-2012).
 - Member of the LANL Lujan Neutron Scattering Center Materials Program Advisory Committee (MPAC), 2005-2017 (chairman of the magnetism subcommittee).
 - Member of the 2008 National Science Foundation Graduate Research Fellowship Program evaluation panel, Arlington, VA, February 8-10, 2008.
 - International Atomic Energy Agency (IAEA) Expert in the project “Human Resource Development and Nuclear Technology Support,” Lima, Peru, 2004 and 2006.
 - ORNL program manager of the U. S. Japan Cooperative Program on Neutron Scattering (ISSP-ORNL and JAEA-ORNL programs), since 1994.
- Conference Organization
 - Organizer of six Telluride workshops on magnetoresistive oxides, Telluride, CO, 2000, 2002, 2013, 2015, 2017 and 2019.
 - Organizer of the invited technical session “Tribute to Herb Mook” at the International Conference on Neutron Scattering, Daejeon, Korea, July 2017
 - Co-organizer of the symposium “Advances and Challenges in Multimodal Characterizations of Functional Materials”, International Materials Research Congress (IMRC-2016) Cancun, Mexico, Aug. 14-19, 2016.
 - Chairman of the local organizing committee, 2014 American Conference on Neutron Scattering (ACNS-2014), Knoxville, TN, June 1-5, 2014.
 - Member of the Program Committee, The Magnetism and Magnetic Materials (MMM) conference in 2010 and 2013
 - Member of the International Scientific Advisory Committee of the conference “Polarized Neutrons in Condensed Matter Investigations” (PNCMI 2012), Paris, France July 2012.
 - Co-organizer of two Focus Topic sessions on “Magnetoresistive manganites and related transition metal alloys,” Meeting of the American Physical Society, Seattle,

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WA, March 2001, and on “Complex oxides, bulk materials,” Meeting of the American Physical Society, Pittsburgh, PA, March 2009.

- Co-organizer of the 2009 Workshop on Inelastic Neutron Scattering (WINS 2009), Oak Ridge, TN, May 1-2, 2009.

PROFESSIONAL SOCIETIES MEMBERSHIP

- Fellow, American Physical Society
- Fellow, Neutron Scattering Society of America

HONORS AND AWARDS

- Fellow of the Neutron Scattering Society of America, March 2016
- Fellow of the American Physical Society, October 2015
- *The Neutron Scattering Society of America* Exceptional Service Award, June 2014.
- *The US. DOE Office of Science* Outstanding Mentor Award, February 2008.
- The Ralph Myers Teaching Award, *University of Maryland*, College Park, Maryland (September 1984).
- *International Atomic Energy Agency (IAEA)* fellowship (July 1979 - June 1981).

OTHER EXPERIENCE AND COMMUNITY INVOLVEMENT

- Graduate of Leadership ORNL, class of 2000. *Program sponsored by Lockheed Martin Energy Systems and the University of Tennessee to train leaders at ORNL.*
- Graduate of Leadership Plenty, class of 2005–2006. *Program of the Pew Partnership for Civic Change sponsored by the Institute of Public Service of the University of Tennessee, the City of Knoxville, and Knox County to provide innovative training designed to strengthen leadership in East Tennessee’s growing Hispanic community.*
- Founding member/first chair of the ORNL Hispanic/Latino American Organization 2004–2007. *Worked with the ORNL Diversity Office to establish a Hispanic/Latino resource group to help recruit and retain employees from this important sector of the national workforce, to welcome and mentor new Hispanic employees, to support a network of Hispanic employees, and to promote a diverse and inclusive work environment in the workplace. This group was officially recognized in 2005 as the first ORNL Hispanic/Latino American Organization. Served as the first chair of this organization from 2005–2007. This organization was later renamed to the ORNL Hispanic/Latino American Committee HLAC.*
- Member of the Advisory Committee, Team UT-Battelle, 2002–2004. *Member of the panel that provided advice on community service projects.*

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FULL LIST OF INVITED TALKS AND PUBLICATIONS

INVITED TALKS

- “History on Neutron Scattering at ORNL”, Pittsburgh Diffraction Conference, Oak Ridge, TN. October 25, 2019
- “Spin interactions in the molecular multiferroic $(\text{ND}_4)_2[\text{FeCl}_5(\text{D}_2\text{O})]$ ”, Workshop on Competing Interactions and Colossal Responses in Transition Metal Oxides, Telluride, CO, June 25-29, 2019.
- “Materials research at the neutron scattering facilities at ORNL”, plenary talk at the Joint International Conference on Nuclear Science and Technology Application 2017 (ICONSTA 2017) and Materials Research Society-Indonesia Conference and Congress 2017 (MRS-INA C&C 2017), Yogyakarta, Indonesia, Oct 8-12, 2017.
- “Evidence of electronic soft phases in a molecular multiferroic”, Joint International Conference on Nuclear Science and Technology Application 2017 (ICONSTA 2017) and Materials Research Society-Indonesia Conference and Congress 2017 (MRS-INA C&C 2017), Yogyakarta, Indonesia, Oct 8-12, 2017.
- “Evidence of electronically-soft phases in a molecular multiferroic”, *Workshop on Competing Interactions and Colossal Responses in Transition Metal Oxides*, Telluride, CO, June 26-30, 2017
- “Spin dynamics of multiferroic materials studied by neutron scattering”, *Telluride Workshop on Competing Interactions and Colossal Responses in Transition Metal Compounds*, Telluride, CO, June 8-12, 2015.
- “Spin dynamics of multiferroic materials studied by neutron scattering”, *International Conference on Complex Oxides*, Protaras, Cyprus, May 19-23, 2014.
- “Revisiting the magnetism of LaCoO_3 ”, Telluride Workshop on Competing Interactions and Colossal Responses in Transition Metal Compounds, Telluride, CO, July 15-19, 2013.
- “Neutron scattering studies of Multiferroic materials,” *International Symposium on Neutron Scattering*, Mumbai, India, January 14-17, 2013.
- “Neutron scattering at the SNS and HFIR at ORNL,” Louisiana Alliance for Simulation-Guided Materials Applications (LA-SiGMA) Seminar Series, Louisiana State University, Baton Rouge, LA, October 17, 2012.
- “Long-range magnetic interactions in multiferroic MnWO_4 ,” WE.-Heraeus Seminar, “New Routes to Single Phase Multiferroics” Physikzentrum Bad Honnef, Germany April 23-25, 2012.
- “Neutron scattering studies of multiferroic materials,” Joint meeting of the National Societies of Black and Hispanic Physicists, Austin, TX, September 22-24, 2011.
- “Long-range interactions in multiferroic materials,” Workshop on Competing Interactions and Colossal Responses in Transition Metal Compounds, Telluride, CO July 18-22, 2011.
- “Opportunities in neutron science,” 2010 Meeting of the American Physical Society, Portland, Oregon, March 15-19, 2010.
- “Neutron scattering studies of the magnetic interactions in the geometrically frustrated triangular lattice antiferromagnet CuFeO_2 ,” VI International Symposium on Radiation Physics, Neutrons and Ionizing Radiations and Application, Zacatecas, Mexico, March 7-10, 2010.

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- “Spin dynamics of the multiferroic systems CuFeO_2 and MnWO_4 ,” Workshop on Competing Interactions and Colossal Responses in Transition Metal Compounds, Telluride, CO, August 10-14, 2009.
- “In-situ time-resolved analyses of microstructure in advanced materials under high magnetic fields using neutron scattering,” TMS Annual Meeting, San Francisco, CA, February 15-19, 2009.
- “Spin and charge/orbital ordering in nearly half-doped manganites,” Meeting of the American Crystallographic Association, Knoxville, TN, June 2, 2008.
- “Magnetic interactions in the geometrically frustrated triangular lattice antiferromagnet CuFeO_2 ,” 6th Workshop on Orbital Physics and Novel Phenomena in Transition Metal Oxides, Stuttgart, Germany, October 10-11, 2007.
- “Spontaneous spin-lattice coupling in the geometrically frustrated triangular lattice antiferromagnet CuFeO_2 ,” Meeting of the American Physical Society, Denver, CO, March 2007.
- “Spin-lattice coupling in the geometrically frustrated triangular lattice antiferromagnet CuFeO_2 ,” XV International Materials Research Congress, Cancun, Mexico, August 2006.
- “Time-resolved studies at the Wide Angle Neutron Diffractometer,” Annual Meeting of the American Crystallographic Association, Honolulu, HI, July 22-27, 2006.
- “Spontaneous spin-lattice coupling in the geometrically frustrated triangular lattice antiferromagnet CuFeO_2 ,” Telluride workshop on Competing interactions and colossal responses in transition metal compounds, Telluride, CO, July 2006.
- “Electronically smectic-like phase in a nearly half-doped manganite,” International workshop on self-organized strongly correlated electron systems, Seillac, France, May 29-31, 2006.
- “Polarized inelastic neutron scattering in the CMR manganite $\text{La}_{0.70}\text{Ca}_{0.30}\text{MnO}_3$,” Polarized Inelastic Neutron Scattering Workshop, Brookhaven National Laboratory, April 2006.
- “Anisotropic antiferromagnetic ordering in the charge/orbital ordered manganite $\text{Pr}_{0.55}(\text{Sr}_{1-y}\text{Ca}_y)_{0.45}\text{MnO}_3$,” International Materials Research Congress, Cancun, Mexico, August 21-25, 2005.
- “Neutron scattering studies of colossal magnetoresistance materials,” International Conference on Spectroscopy, Lima, Peru, May 23-27, 2005.
- “Neutron and x-ray scattering in $\text{Pr}_{1-x}(\text{Ca}_{1-y}\text{Sr}_y)_x\text{MnO}_3$ ($x=0.45, y=0.15$), a CMR manganite near a bicritical point,” Telluride Workshop in Magnetoresistive Oxides and Related Transition Metal Alloys, Telluride, CO, June 28-July 3, 2004.
- “Microscopic spin interactions in the metallic and insulating phases of the colossal magnetoresistance manganites,” 15th American Conference on Crystal Growth and Epitaxy, Keystone, CO, July 20-24, 2003.
- “Spin waves in the ferromagnetic metallic and insulating phases of the CMR manganites,” Workshop on CMR Manganites and related Transition Metal Oxides, Telluride, CO, July 14-20, 2002.
- “Spin interactions in the field-induced insulator-metal transition of $\text{Pr}_{0.70}\text{Ca}_{0.30}\text{MnO}_3$,” Meeting of the American Physical Society, Indianapolis, IN, March 18-22, 2002.
- “Spin dynamics in the insulating and metallic ferromagnetic phases of the CMR manganites $\text{A}_{1-x}\text{B}_x\text{MnO}_3$ ($\text{A}=\text{La}, \text{Pr}; \text{B}=\text{Ca}$),” Workshop on the Present and Future of the Research in Manganites, Granada, Spain, September 17-19, 2001.
- “Resistivity rise and short-range ordering in the CMR manganites,” International Conference on Neutron Scattering, Munich, Germany, September 10-13, 2001.

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- “Neutron scattering studies of the magnetic coupling in the insulating and metallic ferromagnetic phases of the CMR manganites,” JRCAT-CERC Workshop on Phase Control on Correlated Electron Systems, Maui, HI, June 6-10, 2001.
- “Magnons and phase separation in $\text{Pr}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$,” Telluride Summer Research Center Workshop on CMR Manganites and Related Transition Metal Oxides, Telluride, CO, July 16-22, 2000.
- “Neutron science--a tool to understanding our material world,” National Science Bowl, Washington DC, May 6, 2000.
- “Magnons and phonons in the CMR manganites $\text{Ln}_{1-x}\text{A}_x\text{MnO}_3$ ($x \sim 0.30$),” March Meeting of the American Physical Society, Minneapolis, MN, March 20-24, 2000.
- “Inelastic neutron scattering,” 3rd Spanish Neutron Scattering School, Oviedo, Spain, June 2-5, 1999.
- “Spin dynamics of the CMR manganites $\text{Ln}_{1-x}\text{A}_x\text{MnO}_3$ ($x \sim 0.30$),” Telluride Summer Research Center Workshop on Magnetoresistive Oxides, Telluride, CO, July 13-18, 1998.
- “Neutron scattering research at the High Flux Isotope Reactor,” Mexico-USA Workshop on Scientific Facilities for Materials Research, Argonne National Laboratory, March 25-28, 1996.
- “Neutron scattering studies of amorphous invar alloys,” International Symposium on Magnetoelasticity and Electronic Structure of Transition Metals, Alloys and Films, Duisburg, Germany, March 1989.
- “Spin dynamics of amorphous $\text{Fe}_{90-x}\text{Ni}_x\text{Zr}_{10}$,” 34th Annual Conference on Magnetism and Magnetic Materials, Boston, MA, November 1988.

TECHNICAL SEMINARS AND TUTORIALS

- “30+ years in neutron scattering at ORNL, a personal perspective (A journey from the Andes to the Smokies)” Oak Ridge Postdoctoral Association, Standing on the Shoulders of Giants Seminar Series, February 16, 2018
- “Science with Neutrons”, NScD Neutron Lifecycle Lecture Series, Oak Ridge National Laboratory, July 8, 2016
- “30 years in neutron scattering at ORNL, a personal perspective (A journey from the Andes to the Smokies)” Oak Ridge Postdoctoral Association, Standing on the Shoulders of Giants Seminar Series, August 31, 2016
- “Spin dynamics of multiferroic materials studied by neutron scattering”. Condensed Matter Colloquium, Condensed matter and Magnet Science Division, Los Alamos National Laboratory, December 10, 2014.
- “Neutron scattering at Oak Ridge National Laboratory. Application to the study of Multiferroic Materials,” Physics Colloquium, University of Tennessee, Knoxville, TN, March 24, 2014.
- “Neutron scattering studies of multiferroic materials,” Condensed Matter Seminar, Department of Physics, Michigan State University, East Lansing, MI, March 11, 2013.
- “Recent studies on multiferroic materials,” Condensed Matter Seminar, Department of Physics and Astronomy, Louisiana State University, LA, October 18, 2012.
- “Neutron triple axis spectrometry,” Chemistry Department, University of Tennessee, Knoxville, TN, February 11, 2011.
- “Neutron Scattering at Oak Ridge National Laboratory,” Physics Department, Morehouse

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College, Atlanta, GA, November 16, 2010.

- “Spin excitations in multiferroic CuFeO_2 ,” Physics Colloquium, Department of Physics, University of Kentucky, Lexington, KY, September 17, 2010.
- “Why neutrons?,” Joint Annual Conference of the National Society of Black Physicists and the National Society of Hispanic Physicists, Nashville, TN, February 11-15, 2009.
- “Magnetic interactions in the geometrically frustrated triangular lattice antiferromagnet CuFeO_2 ,” Technical Seminar, Graduate School of Engineering Science, Osaka University, Toyonaka, Japan, June 13, 2008.
- “Magnetic interactions in the geometrically frustrated triangular lattice antiferromagnet CuFeO_2 ,” Technical Seminar, Department of Physics, University of Tennessee-Knoxville, Knoxville, TN, September 24, 2007.
- “Introduction to neutron scattering,” Tutorial, International Materials Research Congress, Cancun, Mexico, August, 2006.
- “Introduction to neutron scattering,” Tutorial, International Materials Research Congress, Cancun, Mexico, August, 2005.
- “Introduction to neutron scattering,” Andean School of Spectroscopy, Lima, Peru May 16-20, 2005.
- “Microscopic spin interactions in the metallic and insulating phases of the colossal magnetoresistance manganites,” Technical Seminar, Correlated Electron Research Center, Tsukuba, Japan, May 30, 2002.
- “Microscopic spin interactions in the colossal magnetoresistance manganites studied by inelastic neutron scattering,” Condensed Matter Seminar, National High Magnetic Field Laboratory, Tallahassee, FL, April 5, 2002.
- “Spin dynamics in the insulating and metallic ferromagnetic phases of the CMR manganites $\text{A}_{1-x}\text{B}_x\text{MnO}_3$ ($\text{A}=\text{La}, \text{Pr}$; $\text{B}=\text{Ca}$),” General ILL seminar, Colloge IV, Institut Laue Langevin, Grenoble, France, November 14, 2001.
- “Neutron scattering studies of the CMR manganites at Oak Ridge National Laboratory,” Advance Science Research Center Japan Atomic Energy Research Institute, Tokai, Japan, June 14, 2000.
- “Spin dynamics of the colossal magnetoresistance manganites $\text{A}_{1-x}\text{B}_x\text{MnO}_3$ near $x=0.3$,” Condensed Matter Seminar, Department of Physics, University of California-Santa Cruz, Santa Cruz, CA, November 12, 1999.
- “Neutron Scattering from condensed matter systems,” Physics Colloquium, Department of Physics, University of Alabama in Huntsville, Huntsville, AL, September 28, 1999.
- “Spin dynamics of the colossal magnetoresistance manganites $\text{Ln}_{1-x}\text{A}_x\text{MnO}_3$,” Department of Physics, University of Zaragoza, Zaragoza, Spain, May 28, 1999.
- “Spin dynamics of the CMR manganites $\text{Ln}_{1-x}\text{A}_x\text{MnO}_3$ ($x \sim 0.30$),” School of Science and Engineering, Waseda University, Shinjuku, Tokyo, Japan, June 22, 1998.
- “Spin dynamics of the colossal magnetoresistance manganites $\text{A}_{1-x}\text{B}_x\text{MnO}_3$ ($x \sim 0.30$),” Physics Colloquium, Department of Physics University of Missouri, Columbia, MO, April 6 1998.
- “Spin dynamics of the colossal magnetoresistance manganites,” Technical Seminar, Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL, March 13, 1998.

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- “Neutron scattering studies of the spin dynamics of the colossal magnetoresistance manganites,” Department of Physics, Southern Illinois University, Carbondale, IL, February 13, 1998.
- “Neutron scattering studies of magnetic excitations in solids,” Department of Physics, Southern Illinois University, Carbondale, IL, April 12, 1996.
- “Neutron scattering at the High-Flux Isotope Reactor in Oak Ridge,” Kyoto University Reactor Research Institute, Kumatori, Osaka, Japan, October 18, 1994.
- “Neutron scattering at the High-Flux Isotope Reactor in Oak Ridge,” Department of Earth and Space Science, Osaka University, Toyonaka, Osaka, Japan, October 17, 1994.
- “Neutron scattering studies of the spin dynamics of magnetic materials,” Department of Physics, Ball State University, Muncie, IN, February 17, 1994.
- “Neutron scattering studies of the spin dynamics of an itinerant-electron antiferromagnet: $Mn_{90}Cu_{10}$,” Department of Physics, North Dakota State University, Fargo, ND, November 19, 1993.
- “Neutron scattering studies of the spin dynamics of itinerant antiferromagnets,” Department of Physics, University of Missouri-Kansas City, Kansas City, MO, February 19, 1993.

PUBLICATIONS

Refereed journal publications (h-index = 33)

1. J. A. Fernandez-Baca and J. W. Lynn, “Neutron scattering studies of the magnetic superconductor $Ce_{1-x}Tb_xRu_2$,” *J. Appl. Phys.* **52**, 2183 (1981).
2. J. A. Fernandez-Baca, J. W. Lynn, J. J. Rhyne, and G. E. Fish, “Spin dynamics of the amorphous invar alloy $Fe_{0.86}B_{0.14}$,” *J. Appl. Phys.* **57**, 3545 (1985).
3. J. A. Fernandez-Baca, J. J. Rhyne, and G. E. Fish, “Neutron scattering study of the spin dynamics of amorphous $Fe_{70}Ni_{20}Zr_{10}$,” *J. Magn. Magn. Mater.* **54-57**, 289 (1986).
4. J. A. Fernandez-Baca, J. W. Lynn, J. J. Rhyne, and G. E. Fish, “Spin dynamics of amorphous $Fe_{0.86}B_{0.14}$,” *Physica* **136B**, 53 (1986).
5. J. A. Fernandez-Baca, J. W. Lynn, J. J. Rhyne, and G. E. Fish, “Spin dynamics of amorphous $Fe_{90-x}Ni_xZr_{10}$,” *J. Appl. Phys.* **61**, 3406 (1987).
6. J. A. Fernandez-Baca, J. W. Lynn, J. J. Rhyne, and G. E. Fish, “Long-wavelength spin-wave energies and linewidths of the amorphous invar alloy $Fe_{100-x}B_x$,” *Phys. Rev. B* **36**, 8497 (1987).
7. J. J. Rhyne, R. W. Erwin, J. A. Fernandez-Baca, and G. E. Fish, “Magnetic correlations in amorphous Fe-Zr Alloys,” *J. Appl. Phys.* **63**, 4080 (1988).
8. J. A. Fernandez-Baca, J. W. Lynn, J. J. Rhyne, and G. E. Fish, “Low temperature spin waves in amorphous $Fe_{90-x}Ni_xZr_{10}$,” *J. Appl. Phys.* **63**, 3749 (1988).
9. J. A. Fernandez-Baca, J. J. Rhyne, R. W. Erwin, and G. E. Fish, “Neutron scattering study of the magnetic correlations of iron-rich Fe-Zr glasses,” *J. Phys. (Paris)* **49**, C-8, 1207 (1988).
10. S. Raman, S. Kahane, R. M. Moon, J. A. Fernandez-Baca, J. L. Zarestky, J. E. Lynn, and J. W. Richardson, “Thermal-neutron scattering lengths and capture by even calcium isotopes,” *Phys. Rev. C* **39**, 1297 (1989).
11. J. A. Fernandez-Baca, “Neutron scattering studies of amorphous invar alloys,” *Physica B* **161**, 211 (1989).
12. J. A. Fernandez-Baca, J. J. Rhyne, G. E. Fish, M. Hennion, and B. Hennion, “Spin dynamics of amorphous $Fe_{90-x}Ni_xZr_{10}$,” *J. Appl. Phys.* **67**, 5223 (1990).

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13. J. A. Fernandez-Baca, R. M. Nicklow, and J. J. Rhyne, "Magnetic excitations in thulium metal," *J. Appl. Phys.* **67**, 5283 (1990).
14. J. A. Fernandez-Baca, R. M. Nicklow, Z. Tun, and J. J. Rhyne, "Neutron scattering study of the magnetic excitations of thulium metal," *Phys. Rev. B* **43**, 3188 (1991).
15. S. Raman, J. A. Fernandez-Baca, and R. M. Moon, "Thermal-neutron scattering length and capture by ^{46}Ca ," *Phys. Rev. C* **44**, 518 (1991).
16. B. C. Chakoumakos, G. Lager, and J. A. Fernandez-Baca, "Refinement of structures of $\text{Sr}_3\text{Al}_2\text{O}_6$ by Rietveld Analysis of neutron powder diffraction data," *Acta Cryst. C* **48**, 414 (1992).
17. J. A. Fernandez-Baca, M. E. Hagen, R. M. Nicklow, Y. Tsunoda, and S. M. Hayden, "Magnetic excitations in the itinerant antiferromagnet $\text{Mn}_{90}\text{Cu}_{10}$," *J. Magn. Magn. Mater.* **104-107**, 699 (1992).
18. M. E. Hagen, H. R. Child, J. A. Fernandez-Baca, and J. L. Zaretsky, "A study of the magnetic critical scattering from the longitudinally modulated antiferromagnets thulium and erbium," *J. Phys: Condensed Matter.* **4**, 8879 (1992).
19. B. C. Chakoumakos, J. A. Fernandez-Baca, and L. A. Boatner, "Refinement of the structures of the layer silicates $\text{MCuSi}_4\text{O}_{10}$ ($\text{M}=\text{Ca}, \text{Sr}, \text{Ba}$) by Rietveld Analysis of neutron powder diffraction data," *J. Solid State Chem.* **103**, 105 (1993).
20. J. A. Fernandez-Baca, M. E. Hagen, R. M. Nicklow, T. G. Perring, and Y. Tsunoda, "High-energy magnetic excitations in $\text{Mn}_{90}\text{Cu}_{10}$," *J. Appl. Phys.* **73**, 6548 (1993).
21. Y. S. Yang, B. D. Gaulin, J. A. Fernandez-Baca, Naushad Ali, and G. D. Wignall, "Small-angle scattering studies of $\text{Ce}(\text{Fe}_{1-x}\text{Al}_x)_2$," *J. Appl. Phys.* **73**, 6066 (1993).
22. R. B. Rogge, Y. S. Yang, Z. Tun, B. D. Gaulin, J. A. Fernandez-Baca, R. M. Nicklow, and A. Harrison, "A neutron scattering study of the Quasi-One-Dimensional Dilute Ising-Like Antiferromagnet $\text{CsCo}_{0.83}\text{Mg}_{0.17}\text{Br}_3$," *J. Appl. Phys.* **73**, 6451 (1993).
23. S. Katano, S. Funahashi, N. Môri, Y. Ueda, and J. A. Fernandez-Baca, "Pressure effects on the structural phase transitions and superconductivity of $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$ ($x=0.125$)," *Phys. Rev. B* **48**, 6569 (1993).
24. T. M. Giebultowicz, J. A. Fernandez-Baca, R. M. Nicklow, J. K. Furdyna, and U. Debska, "Spin dynamics in a diluted Heisenberg NN antiferromagnet on an HCP lattice – $\text{Zn}_{1-x}\text{Mn}_x\text{Se}$," *J. Appl. Phys.* **73**, 5660 (1993).
25. S. Katano, K. Yamay, J. A. Fernandez-Baca; and S. Funahashi, "Crystal-structure of the tetragonal superconductor $\text{CaLaBaCu}_3\text{O}_x$ ($6.69 \leq x \leq 6.94$)," *Physica C* **217**, 73 (1993).
26. S. Katano, J. A. Fernandez-Baca, S. Funahashi, N. Môri, Y. Ueda, and K. Koga, "Crystal structure and superconductivity of $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$ ($0.03 \leq x \leq 0.24$)," *Physica C* **214**, 64 (1993).
27. H. Ikeda, J. A. Fernandez-Baca, R. M. Nicklow, M. Takahashi, and K. Iwasa, "Fracton excitations in a diluted Heisenberg Antiferromagnet near the percolation threshold: $\text{RbMn}_{0.39}\text{Mg}_{0.61}\text{F}_3$," *J. Phys: Condens. Matter* **6**, 10543 (1994).
28. X. -L. Wang, J. A. Fernandez-Baca, Z. R. Wang, D. Vaknin, and D. C. Johnston, "Neutron-diffraction study of magnetic-ordering of BaCuO_{2-x} ," *J. Appl. Phys.* **75**, 6603 (1994).
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