Vita

Margaret P. Hill

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Education

Ph.D. Molecular Science Southern Illinois University at Carbondale, May 1994
M.S. Physics Southern Illinois University at Carbondale, May 1989
B.S. Physics College of William and Mary, August 1976

Teaching/Employment -- University Level

Southeast Missouri State University, Full Professor, Physics 8/16-present
Southeast Missouri State University, Associate Professor, Physics 8/04-8/16
Southeast Missouri State University, Assistant Professor, Physics 8/00-8/04
Southern Illinois University, Carbondale, Associate Scientist (8/99-8/00)
University of Northern Iowa, Assistant Professor (8/96-5/00)
Southern Illinois University, Carbondale, physics, instructor (8/95-5/96)
John Wiley & Sons, editorial asst. to Dr. J. D. Cutnell for work on calculus based physics text (9/94-5/95)
Southern Illinois University, Carbondale, physics, teaching assistant (9/86-12/93)
St. Louis University, Adjunct Faculty through Vianney High School (9/84-6/86)
General Physics (2 semester course)

Teaching Experience--Secondary Level

Vianney High School, Bro. Joseph Grieshaber, Principal, St. Louis, MO (9/84-6/86)
Physics, Geometry (10th-12th grade); Chair, Science Department, 1985-86
Brittany Woods Middle School, University City, MO (9/81-6/84)
Physical Science (8th grade)
Hampton Roads Academy, Dr. Robert Cox, Headmaster, Newport News, VA (9/77-6/81)
Physics, Physical Science

Teaching Experience--Gifted Education

Gifted Resource Council, St. Louis, MO (2/84-6/86)--teaching and curriculum development

Workshops Presented

St. Louis Science Center STEAM Program--development of physics and astronomy demonstrations and activities for elementary and secondary teachers. (1985-86)

Expanding Your Horizons in Math and Science--workshop for 7th-9th grade girls at SIUC, 1992-96, 2000.

Jointly developed Workshop activities presented independently at 6 different Indian High Schools in Thrissur, Kerala, India over a 10 day period. (Dr. Waterman presented in Trivandrum.)

(1) Dr. Margaret P. Hill, Department of Physics & Engineering Physics, Southeast Missouri State University, Cape Girardeau, MO 63701 USA, "Active Learning in Physics: Strategies for Enhancing Your Course," Workshop on Active Learning For High School Physics Teachers, Kerala, INDIA October 13-23, 2008.

(2) Dr. Margaret A. Waterman, Departments of Biology and Middle & Secondary Education; Dr. Margaret P. Hill, Department of Physics and Engineering Physics, Southeast Missouri State University, Cape Girardeau, MO 63701 USA, "Active Engagement Promotes Learning: Strategies for Your Classroom," Workshop on Active Learning For High School Teachers, Kerala, INDIA October 13-23, 2008.

(3) Dr. Margaret P. Hill, Department of Physics & Engineering Physics; Dr. Margaret Waterman, Departments of Biology and Secondary Education, Southeast Missouri State University, Cape Girardeau, MO 63701 USA, "Learning Styles, A Presentation on Individual Learning Preferences: what they mean and how to address them," Workshop on Active Learning For High School Teachers, Kerala, INDIA October 13-23, 2008.

Professional Certification

Missouri Lifetime Teaching Certificates: Physics, Physical Science, Math 7-9

Professional Memberships

American Physical Society
American Association of Physics Teachers (Chair Committee on Women in Physics (2005-2007)
American Society of Engineering Education
Association for Women in Science
American Association of University Women
Missouri Association of Physics Teachers (President 2015-2016)
Missouri Academy of Science
SDE/Graduate Women in Science
Sigma Xi

Honors and Awards

1992 SIUC Doctoral Student Woman of Distinction
SIUC Graduate Research Fellowship, 1992-1993
College of Science, Technology, and Agriculture Service Award 2013-2014

Grants

Hill, Margaret, PI, Marcus Bond, co-PI, Sean Gottlieb, co-PI, "MRI: Acquisition of a Powder X-Ray Diffractometer to Enhance Multi-Departmental Materials Research," NSF-MRI Proposal, 24 mo., $193,564, submitted January 11, 2017. Not Funded.

Michael Rodgers, Margaret Hill, "Bootheel Total Eclipse Project," Julena Steinhider Duncombe Mini-Grant Program, AAS, $1,524, 6 mos. Submitted January 13, 2017. Not funded.

Tamela Randolph and Margaret Hill, "Solar Powered Girls: The Great American Eclipse 2017," Julena Steinhider Duncombe Mini-Grant Program, AAS, $1,382, 6 mos. Submitted January 13, 2017. Funded.

Holmes, Stephen M., Naushad Ali, Alicia M. Beatty, Margaret P. Hill, and Justin R. Walensky, co-PIs, "MRI: Acquisition of a Magnetometer and Establishment of a Regional Magnetic

Characterization User and Service Facility," NSF-MRI Proposal, 36 mo., $259,543, submitted January 22, 2015. Not funded.

J. Tansil, J. Peng, P. Hill, co-PIs, "Show-Me Physics in 2011: an Outreach Program Sponsored by the Physics and Engineering Physics Department at Southeast Missouri State University," American Physical Society: Public Outreach and Informing the Public Grants, $10,000, submitted Jan. 2011. Not Funded.

Jose, Boby and Margaret P. Hill, "Incorporating Active Learning Techniques in High School Science Classes," International Leadership in Education Program (ILEP) Small Grants Program, to travel to India and present workshops on Active Learning techniques for High School Teachers, October 12-24, 2008, funded $4,778.

FFR, PI, "Implementation of a Personal Response System to Facilitate Student Interactions in a Small Classroom Setting," $7,650, 5/05-5/07, funded.

NSF proposal, PI, "CAREER: A Materials Science Program for the Synthesis and Characterization of Novel Magnetic Materials," 2002, $498,913, not funded.

GRFC, PI, "Affects of non-magnetic ion substitution on the magnetic and electrical properties of R_5Si_3 (R = Tb, Er and Ho) compounds, SEMO, $2,510, 5/02, funded.

Cottrel College Science Award, renewal, research on mechanical alloying of $CeFe_2$ and related magnetic materials, $8,562, 8/00-8/02, funded.

NSF proposal, Co-PI with N. Ali, I. S. Dubenko, and A. Ignatov, "Magnetic and Structural Instability in Rare Earth Intermetallics," $286,442, submitted 1/00, not funded.

NSF POWRE grant proposal PI, "A Study of Ferromagnetic Chromium Ordering in $RCrSb_3$ (R = rare earth), $75, 109, submitted 12/99, not funded.

NSF proposal, Co-PI with N. Ali, I. S. Dubenko, and A. Ignatov, "Relationship between the electronic and local structure of $R_{1-x}Ca_xMnO_{3+\delta}$ CMRs," $239,966, submitted 10/99, not funded.

NSF proposal, Co-PI with N. Ali, I. S. Dubenko, and A. Ignatov, "Relationship between the electronic and local structure of $R_{1-x}Ca_xMnO_{3+\delta}$ (R = La, Pr) CMRs," submitted 10/99, not funded.

Cottrel College Science Award--research on mechanical alloying of $CeFe_2$ and related magnetic materials, $34,230, 1997-9.

Summer Research Fellowship--research on R_5Si_3 magnetic materials, UNI, $4,500, summer 1997.

Faculty Technology Equipment Grant--computer equipment for data acquisition, UNI, $4,203, 1996.

SDE/Adele Lewis Fellowship Fund--reasearch on reentrant magnetic alloys, $1,200, 1995.

Oak Ridge Associated Universities Travel Grant--money to travel to Oak Ridge National Lab to perform neutron scattering experiments, $700 (received twice, 1994 and 1995).

Publications in Refereed Journals

Anil Aryal, Abdiel Quetz, Sudip Pandey, Tapas Samanta, Igor Dubenko, Margaret Hill, Dipanjan Mazumdar, Shane Stadler, Naushad Ali, "Magnetostructural Phase Transitions and Magnetocaloric Effects in $Mn_{1-x}Al_xCoGe$ Compounds", J. Alloys and Comp., 709 (2017) 142-146.

M. P. Hill, I. Dubenko, T. Samanta, A. Quetz and N. Ali, "Magnetic and Magnetocaloric Properties of the New Rare Earth-Transition Metal Intermetallic Compound $Gd_3Co_{29}Ge_4B_{10}$," J. App. Phys. **111**, 07E333, 2012.

G. K. Marasinghe, Weerasinghe Priyantha, Kishore Kamaraju, W. J. James, W. B. Yelon, I. Dubenko, Peggy Hill, N. Ali, M. Ellouze, and P. l'Heritier, "Mixed Rare-Earth Effects in $(Sm/Gd)_2(Fe/Si)_{17}$ Intermetallics," IEEE Transactions on Magnetics, **37** (2001) 2599.

I. S. Dubenko, P. Hill, N. Ali, "Magnetic Properties of $LaCr_{1-x}M_xSb_3$ (M = V, Mn, Fe, Cu and Al)," J. Appl. Phys., 89 (2001) 7326.

J. A. Fernandez-Baca, Peggy Hill, B. C. Chakoumakos and Naushad Ali, "Neutron Diffraction Study of the Magnetic Structures of $CeMn_2Ge_2$ and $CeMn_2Si_2$," J. Appl. Phys. 79 (1996) 5398.

P. Hill, Naushad Ali, A.J.A. de Oliveira, W.A. Ortiz, P.C. de Camargo and Eric Fawcett, "Local Moments in the Paramagnetic Phase of Dilute CrV Alloys," J. Phys. Condens. Matter 6 (1994) 1761.

Naushad Ali, J. T. Masden, Peggy Hill and Arthur Chin, "Magnetic Transition in Quasi One Dimensional Wires and Thin Films of Gadolinium," Intl. J. Phys. B, 7 (1993) 147.

P. Hill and Naushad Ali, "Investigation of the Transition From Ferromagnetic to Antiferromagnetic Order in the System $CeMn_2(Ge_xSi_{1-x})_2$," J. Appl. Phys., 73 (1993) 5683.

P. Hill, F. Willis and Naushad Ali, "Investigation of the Magnetic-Nonmagnetic Crossover Region in the Kondo Lattice System $CeSi_x$," J. Phys.: Condens. Matter. 4 (1992) 5015.

Naushad Ali, P. Hill, X. Zhang and F. Willis, "Magnetization and Thermoremanent Magnetization of $Tb_2Mo_2O_7$ Spin Glasses," J. Alloys and Compounds 181 (1991) 281.

Xie Xu, S. A. Shaheen, Peggy Hill and Naushad Ali, "Structural, Electrical and Magnetic Properties of $La_xCe_{1-x}Si$," J. Alloys and Compounds 181 (1991) 305.

P. Hill, S. Labroo, X. Zhang, and N. Ali, "Electrical and Magnetic Properties of $R_2Mo_2O_7$ (R = Nd, Sm, Gd, Tb and Y) Pyrochlore Compounds," J. Less Comm. Metals 149 (1989) 327.

N. Ali, P. Hill, S. Labroo, and J. E. Greedan, "Magnetic and Electrical Properties of $R_2Mo_2O_7$ Pyrochlore Compounds," J. Solid State Chem. 83 (1989) 178.

S. Labroo, X. Zhang, P. Hill and N. Ali, "Electrical and Magnetic Properties of Antiferromagnetic Rare Earth Disilicides," J. Less Comm. Metals 149 (1989) 337.

S. Labroo, X. Zhang, P. Hill and N. Ali, "Observation of Valence Fluctuation Phenomena in $YbSi_2$," J. Less Comm. Metals 149 (1989) 331.

X. Zhang, S. Labroo, P. Hill and N. Ali, "Effect of Fe Substitution in Y-Ba-Cu-O Superconductors," Phys. Lett. A 130 (1988) 311.

N. Ali, X. Zhang, P. Hill, and S. Labroo, "Effect of Fe Substitution in High-T_c Y-Ba-Cu-O Superconductors," J. Less Comm. Metals, 149 (1989) 435.

Presented Abstracts

Jordan Duncan and Margaret P. Hill, "Build a Sun Funnel for Everyday Solar Observing," Astronomical Society of the Pacific, 129th Annual Meeting, Engaging Diverse and Underserved Communities in Astronomy and STEM, St. Louis, MO, December 5-8, 2017.

Dr. Margaret Hill and Dr. Michael Rodgers, "Beyond the Shadow and Into the Light: STEM Outreach Activities Using Spectroscopy and Home Built Spectroscopes," Astronomical Society of the Pacific, 128th Annual Meeting: Engage Every Child in the 2017 Solar Eclipse, St. Louis, MO, December 8-9, 2016. (Abstract: https://www.astrosociety.org/wp-content/uploads/2016/12/program2016.pdf)

P. Hill, A. Aryal, A. Quetz, S. Pandey, T. Samanta, I. Dubenko, D. Mazumdar, S. Stadler and N. Ali, "Magnetostructural Phase Transitions and Magnetocaloric Effects in $Mn_{1-x}Al_xCoGe$ Compounds, 61st Annual Conference on Magnetism and Magnetic Materials, New Orleans, LA, October 31-November 4, 2016.

Hill, P., Dawson, C., Spence, Z., Dubenko, I., Quetz, A., and Ali, N., "Effects of Annealing on the Crystal Structure of the Magnetocaloric Materials Mn_5Si_3 Type Alloys," 50th Annual Meeting Missouri Academy of Science/Missouri Association of Physics Teachers, University of Central Missouri, Warrensburg, MO, April 25-26, 2014.

Hill, P. "Incorporating Active Learning Techniques in a Materials Science Course." Missouri Academy of Science Annual Meeting, College of the Ozarks, April 20, 2013.

P. Hill, "The Use of Case Studies to Stimulate Interest and Higher Order Thinking in an Upper Level Materials Science Course," 2013 SOTL Fellows Dinner Symposium, Southeast Missouri State University, April 30, 2013.

P. Hill, "A Simple Method for the Accurate Determiantion of "g" Using a Cart on an Inclined Plane." Missouri Academy of Science, April 16, 2011, Lincoln University, Jefferson City, MO.

M. P. Hill, I. Dubenko, T. Samanta, A. Quetz and N. Ali, "Magnetic and Magnetocaloric Properties of the New Rare Earth-Transition Metal Intermetallic Compound $Gd_3Co_{29}Ge_4B_{10}$," 56th Conference on Magnetism and Magnetic Materials, Oct. 30-Nov. 3, 2011, Scottsdale, AZ.

Hill, M. P., N. Golden, M. Clark, J. Shoemaker, A. Pathak, I. Dubenko and N. Ali, "Effect of Al Substitution on the Structural and Magnetic Transitions of the Ferromagnetic Shape Memory Alloy Ni_2MnGa," Missouri Academy of Science, Missouri State University, Springfield, MO, April 17, 2010.

Hill, Margaret, and Boby Jose, "Incorporating Active Learning into High School Physics Teaching in India," American Association of Physics Teachers Winter Meeting, Chicago, IL, Feb. 12-16, 2009.

P. Hill, D. Edorh, S. Roy and N. Ali, "Effects of yttrium substitution on the magnetic and electrical properties of $LaBaCo_2O_{5+\delta}$," 47th Annual Conference on Magnetism and Magnetic Materials, Tampa, FL, Nov. 12-15, 2002.

P. Hill, Sujoy Roy and Naushad Ali, "Anomalous Low Temperature Magnetoresistance of Tb_5Si_3," American Physical Society, March Meeting, Seattle, WA, March 12-16, 2001.

Kanishka Marasinghe, Weerasinghe Priyantha, Kishore Kamaraju, William James, William Yelon, Igor Dubenko, Peggy Hill, and Naushad Ali, "Mixed rare-earth effects in $(Sm/Gd)_2(Fe/Si)_{17}$ intermetallics," 8th Joint MMM-Intermag Conference, San Antonio, TX, January 7-11, 2001.

I. S. Dubenko, P. Hill, N. Ali, "Magnetic Properties of $LaCr_{1-x}M_xSb_3$ (M = V, Mn, Fe, Cu and Al)," J. Appl. Phys., 8th Joint MMM-Intermag Conference, San Antonio, TX, January 7-11, 2001.

G. K. Marasinghe, J. Han, W. J. James, W. B. Yelon, I. Dubenko, Peggy Hill, and N. Ali, "The dependence of transition metal-transition metal magnetic interactions on interatomic distances in $RMn_{6-x}Fe_xA_6$, (R = Nd or Sm, A = Ge or Sn), 48th Midwest Solid State Conference and Midwest Solid State Theory Symposium, Grand Forks, ND, Oct. 13-15, 2000.

Peggy Hill, Julia Moeller and Lance L. Miller, "Magnetic and Electrical Properties of Er_5Si_3 and Tb_5Si_3," APS Meeting, Minneapolis, MN, March 20-24, 2000.

P. Hill and Lance L. Miller, "Magnetic and Electrical Properties of the Rare Earth Silicide Ho_5Si_3," 44th Annual Conference on Magnetism and Magnetic Materials, San Jose, CA, Nov. 15-18, 1999.

P. Hill and Naushad Ali, "Search for Novel Permanent Magnet Materials," Materials Technology Center Annual Meeting, Southern Illinois University, Carbondale, IL, Nov. 3-5, 1999.

S. Malaise, P. Hill, and L. Miller, "Magnetic Properties of the Rare Earth Silicide Er_5Si_3," 45th Annual Midwest Solid State Conference, Manhattan, KS, Oct. 3-4, 1997.

Peggy Hill, Naushad Ali, and J. A. Fernandez-Baca, "Low Temperature Magnetic Structure of the Intermetallic Compound $CeMn_2(Ge_{0.46}Si_{0.54})_2$," APS Meeting, San Jose, CA, March 20-24, 1995.

Peggy Hill, J. A. Fernandez-Baca, B. C. Chakoumakos and Naushad Ali, "Neutron Diffraction Study of the Magnetic Structures of $CeMn_2Ge_2$ and $CeMn_2Si_2$," 40th Annual Conference on Magnetism and Magnetic Materials, Philidelphia, PA, Nov. 6-9, 1995.

Peggy Hill, Nashaud Ali, and J. A. Fernandez-Baca, "Low Temperature Magnetic Structure of the

Intermetallic Compound $CeMn_2(Ge_{0.46}Si_{0.54})_2$," APS Meeting, San Jose, CA, March 20-24, 1995.

P. Hill, Naushad Ali, A.J.A. de Oliveira, W.A. Ortiz, P.C. de Camargo and Eric Fawcett, "The Formation of Local Moments in Dilute Cr-V Alloys." 41st Midwest Solid State Conference, Columbia, MO, Sept. 24-25, 1993.

P. Hill and Naushad Ali, "Study of the Crossover from Ferromagnetic to Antiferromagnetic Order in the System $CeMn_2(Ge_xSi_{1-x})_2$," 40th Midwest Solid State Conference, Urbana-Champaign, IL, Oct. 2-3, 1992.

P. Hill and Naushad Ali, "Investigation of the Transition From Ferromagnetic to Antiferromagnetic Order in the System $CeMn_2Ge_xSi_{1-x})_2$," 37th Annual Conference on Magnetism and Magnetic Materials, Houston, TX, Dec. 1-4, 1992.

N. Ali, X. Zhang, and P. Hill, "First Order Phase Transition from a Ferro- to Antiferromagnetic State in the $Ce(Fe_{1-x}Co_x)_2$ System," APS meeting, Indianapolis, IN, March 1992.

P. Hill and Naushad Ali, "Investigation of the Transition from Ferromagnetic to Antiferromagnetic Order in the System $CeMn_2(Ge_{1-x}Si_x)_2$," APS meeting, Indianapolis, IN, March 1992.

P. Hill, X. F. Zhang, J. Eynon, and N. Ali, "Re-entrant Phase Transition in $Ce(Fe_{1-x}Al_x)_2$," APS meeting, Cincinatti OH, March 1991.

P. Hill, Frank Willis and Naushad Ali, "Magnetic and Electrical Properties of the Ferromagnetic Dense Kondo System $CeSi_x$," 35th Annual Conference on Magnetism and Magnetic Materials, San Diego, CA, Oct 29-Nov. 1, 1990.