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PHYSICS
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Box 173840,
Bozeman, MT 59717-3840**NEW FACE IN THE DEPARTMENT**

Dr. Anton Vorontsov is the newest member of the Physics faculty. His area of research is Condensed Matter Theory. He will begin his teaching duties spring semester. Welcome, Anton.

Familiar Faces at the Holiday Feast

GENERAL NEWS

MSU Equations Part of new Hollywood Movie

The remake of "The Day the Earth Stood Still" contains equations from a paper published by William Hiscock and Hector Calderon.

Minor in Aerospace Engineering

The Board of Regents passed a new Minor in Aerospace Engineering in the Mechanical Engineering Dept., which Bill Hiscock did substantial work on with Professor Doug Cairns of ME. He hopes some Physics students will be interested in adding this minor to their studies. The details of the minor may be found at: <http://tinyurl.com/8Inffu>

Hinode/XRT Pictures in Music Video

David McKenzie provided movies of the Sun for a video production company. One of the movies was used in a music video for a band called the Flobots. The full-Sun X-ray movie from Hinode/XRT appears in two scenes, behind the band on stage. You can see the movie at <http://www.youtube.com/watch?v=H0XmsUiz2hl>

NASA Transition Team

Bill Hiscock, Professor and Director of the Montana Space Grant Consortium and Montana NASA EPSCoR Program, has been invited to meet with the Obama NASA Transition Team.

APS District Advocate

Bill Hiscock was invited (and accepted) to continue as the APS District Advocate with the U.S. Congress for the Montana Congressional District.

Awards, Honors & New Positions

Solar Physicist Receives White House Award

Charles Kankelborg received the Presidential Early Career Award for Scientists and Engineers (PECASE) on December 19 at the White House. The PECASE is the highest award the US government gives to outstanding scientists and engineers beginning their careers. He was nominated for the award by NASA. Besides the honor of receiving a White House award, Kankelborg received a two year extension of his research grant.

Congratulations to Kasey Lund!

Kasey Lund was selected to participate in the first annual U.S. Department of energy Student Energy Research Challenge (SERCh), a national competition held at Oak Ridge National Lab, Oak ridge, TN on Nov. 9-10. His poster described work on Solid Oxide Fuel Cells carried out with Prof. Stephen Sofie in the Mechanical Engineering department.

New position

Professor Emeritus George Tuthill has been named Interim Associate Vice Provost at Plymouth State University.

PH.D. THESIS DEFENSE

Henry "Trae" Winter successfully defended his Ph.D. dissertation "HyLoop: A New Tool for Simulating Flaring Loops", on November 4.

Jack A. Dostal successfully defended his Ph.D. dissertation "An Investigation into Student Understanding of Longitudinal Standing Waves", on December 1.

PUBLICATIONS SUBMITTED

"Magnetic transport, and thermodynamic properties of single crystal CaMn_2O_4 ", B.D. White, J.A. Souza, C. Chiorescu, J.J. Neumeier, and J.L. Cohn, (Submitted to *Physical Review B*).

"Signatures of Magnetic Stress Prior to Three Solar Flares Observed by RHESSI", A. Des Jardins, R. Canfield, D. Longcope, E. McLinden, (Submitted to *The Astrophysical Journal*).

"Thermal expansion of $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ in the vicinity of the ferromagnetic transition: Doping dependence of the critical exponent α ", B.A. McGuire, J.A. Souza, R.K. Bollinger, K.M. Lask, and J.J. Neumeier, (Submitted to *Physical Review B*).

"The First Frontier: High altitude ballooning as a platform for student research experiences in science and engineering". Shane L. Larson (Utah State University), John C. Armstrong (Weber State University), and William A. Hiscock; (Submitted to the *American Journal of Physics*).

PUBLICATIONS

"Piezoelectric Response and Origin in (001) $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})_{0.70}\text{Ti}_{0.30}\text{O}_3$ Crystal," C.-S. Tu, C.-M. Hsieh, V. Hugo Schmidt, R. R. Chien, and H. Luo, *Applied Physics Letters* **93**, 172905 (2008).

"High pressure structural studies on SrRuO_3 ", M.K. Jacobsen, R.S. Kumar, G. Cao, J.J. Neumeier, A.L. Cornelius, *Journal of Physics and Chemistry of Solids* **69**, 2237 (2008).

"Field-Induced Intermediate Orthorhombic Phase in (110)-cut $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})_{0.70}\text{Ti}_{0.30}\text{O}_3$ Single Crystal," C.-S. Tu, V.H. Schmidt, R. R. Chien, S.-H. Tsai, S.-C. Lee, and H. Luo, *Journal of Applied Physics* **104**, 094105 (2008).

PROPOSALS SUBMITTED

"Montana NASA EPSCoR Research Infrastructure Development Augmentation", William A. Hiscock, PI, NASA, \$ 50,000, one year.

"National Center for New Functionality through Control of Nanoscale Structure and Interactions," Greg J. Salamo, Stephen Durcharme, Ulrike Diebold, V. Hugo Schmidt, Ram S. Katiyar, Daryoosh Vashae, Arunava Gupta, Mansour Mortazavi, NSF EPSCoR STC program.

"Balloon Radiosondes for EngAging Teachers in Hands-on Earth Climate Change Education (BREATHE)", William A. Hiscock, PI; Kim Obbink, Co-I; John Bognar (Anasphere, Inc.), Co-I; Angela Des Jardins, Co-I. NASA Global Climate Change Education program, \$ 500,000, three years.
"Characterization of Multi-functional Interfacial Structures", Yves U. Idzerda, PI; USDOE, \$647,444, three years.

"IRIS-MSU", Charles C. Kankelborg, PI; David M. Klumpar, Co-I; Larry A. Springer, Co-I; LOCMAR, \$55,785, one year.

"Center for Analytical and Molecular Paleontology (CAMP)", Recep Avci, PI; Zhiyong Suo, Co-I; North Carolina State University (NCSSU), \$565,350, five years.

"Energetic Consequences of Fast Magnetic Reconnection", Dana Longcope, PI; NSF, \$302,094, three years.

"Maximum Coherence in Optical Transitions in Rare Earth Ion-activated Solids", Aleksander Rebane, PI; Charles W. Thiel, Co-I; Krishna I. Rupavatharam, Co-I; NSF, \$110, 250, one year.

"Evolving Solar Magnetic Activity on Time Scales Relevant for Space Climate", David E. McKenzie, PI; Smithsonian Astrophysical Observatory (SMAST), \$52,499, one year.

"SpaceBuoy: A University NanoSat Space Weather Mission (II)", David M. Klumpar, PI; Larry A. Springer, Co-I; AFSR, \$110,000, two years.

"Mechanisms of Strain Relief via Alloy Formation at Metal-Metal Interfaces", Richard J. Smith, PI; NSF, \$343,878, three years.

"Mechanisms for Decoherence in Materials for Quantum Information", Rufus L. Cone, PI; Charles W. Thiel, Co-PI; Roger Macfarlane, Co-PI; NSF, \$494,636, three years.

"Some Thermodynamic and Related Problems of Neutron Stars", Sachiko Tsuruta, PI; NSF, \$323,888, three years.

"Growth and Physical Properties Measurement of Novel Condensed Matter Materials", John Neumeier, PI; NSF, \$483,891, three years.

"New Probes of the Neutron Star Interior", Bennett Link, PI; NSF, \$131,650, three years.

"Two-photon deep in vivo optical imaging of the VX2 rabbit carcinoma", Aleksander Rebane, PI; Jean R. Starkey, Co-PI; Congressionally Directed Medical Research Programs (CONDIR), \$104,608, one year.

"Coherent Optical Spectroscopy of Disordered Solids", Rufus Cone, PI; Charles W. Thiel, Co-PI; Roger Macfarlane, Co-PI; NSF, \$475,928, three years.

PROPOSALS FUNDED

"Ramaty High Energy Solar Spectroscopic Imager (RHESSI) Ground-Based Observations Coordination", FY08-FY09, Richard Canfield (PI) and Jiong Qiu (Co-I), \$89,544, University of California, Berkeley.

"Building better probes for two-photon microscopy", Mikhail Drobizhev PI; A. Rebane, Co-I; T. Hughes, Co-I; NIH, \$973,648, four years.

PRESENTATIONS

INVITED TALKS

"Flare Physics in the Hinode Era", David McKenzie, at the "Second Hinode Science Meeting", in Boulder, CO, October 3.

CONTRIBUTED TALKS

"Resident Archive Services of the Yohkoh Legacy Data Archive", a talk by Aki Takeda, at the meeting "IGY+50: 50th Anniversary of the International Geophysical Year", in Tsukuba, Japan, in November. Co-authors are Loren Acton, David McKenzie, Keiji Yoshimura, and Sam Freeland (of Lockheed-Martin).

"NASA Opportunities in the Big Sky Country: The Montana Space Grant Consortium" A. Des Jardins, UM-Missoula Department of Physics and Astronomy colloquium, October 10th and for UM-Western's science and math colloquium, Dec. 8th.

POSTER PRESENTATIONS

"Detecting and Measuring Reconnection Outflows in the Hinode Era", by Sabrina Savage and David McKenzie, at the "Second Hinode Science Meeting", in Boulder, CO, September 29 to October 3.

"X-ray bright points around small emerging flux regions", by Keiji Yoshimura, at the "Second Hinode Science Meeting", in Boulder, CO, September 29 to October 3.

TRAVEL

David McKenzie, Sabrina Savage, Keiji Yoshimura, and Trae Winter all attended the "Second Hinode Science Meeting" in Boulder, CO, September 29 to October 3.

Angela Des Jardins traveled to ExplorationWorks in Helena; Stone Child College in Box Elder; Great Falls; UM-Missoula for MSGC Affiliate visits and talks from October 9-10.

Zhiyong (Jahson) Suo attended a Conference on Analytical & Molecular Paleontology in Raleigh, NC from October 4 – 8.

Recep Avci gave an invited talk at the 20th Annual Conference of Turkish Biophysical Society in Istanbul, Turkey from October 21-25.

Dibyendu Nandi collaborated with Dr. Piet Martens at Harvard Smithsonian Center for Astrophysics in Boston, MA from October 11 – November 2.

Angela Des Jardins and Glenda Winslow traveled to MSU-Northern in Havre; Fort Belknap College in Harlem; Billings; Chief Dull Knife College in Lame Deer; Little Big Horn College in Crow Agency for MSGC Affiliate visits and talks from October 21-23.

Angela Des Jardins and Glenda Winslow traveled to Atlanta, GA for the 2008 Fall Meeting of the National Council of Space Grant Directors from October 25-28.

Angela Des Jardins traveled to Rocky Mountain College and MSU-Billings in Billings for MSGC Affiliate visits and talks on October 30.

Recep Avci gave an invited talk at the Conference on Analytical & Molecular Paleontology at North Carolina State University in Raleigh, NC from November 6 – 8.

Yves Idzerda, Adam McClure and Vanessa Pool gave a presentation at the Magnetism and Magnetic Materials '08 Conference in Austin, TX from November 9 -13.

Aki Takeda attended the meeting "IGY+50: 50th Anniversary of the International Geophysical Year", in Tstukuba, Japan, in November.

Adam McClure conducted x-ray studies on thin magnetic films at the Advanced Light Source in Berkeley, CA from November 19 – 23. Johnathon Holroyd, Vanessa Pool and Yves Idzerda traveled to Advanced Light Source in Berkeley, CA to conduct experiments from November 19 – 23.

Hui Chen gave a seminar to the Physics Department at the University of North Texas in Denton, TX on November 19.

Galinz Malovichko and Valentiyn Grachov attended the MRS meeting in Boston, MA from November 30 - December 5.

Keiji Yoshimura traveled to Sagamihara, Japan for collaboration about HINODE scientific data analysis with Japanese scientists at ISAS/JAXA from November 24 – 26.

Angela Des Jardins and Glenda Winslow traveled to UM-Western in Dillon for a MSGC Affiliate visit and talk on December 8.

Aleks Rebane visited the Dr. Peter Ogilby group at Aarhus University in Aarhus, Denmark from December 11 – 13.

John Carlsten and Dave Klumpar attended AGU meeting in San Francisco, CA from December 14 – 19.