Union in the chapter on the solar system. The rapidly increasing number of newly discovered exoplanets and the general interest in the possibility of finding life and intelligent life in the universe have led the editors to add a new chapter on astrobiology to the previous edition. The revision and expansion of the chapters on the galaxies, the Milky Way, and cosmology also accurately reflect the progress in learning about these areas. These improvements make *Fundamental Astronomy* a valuable handbook for astronomers. The text is delicately balanced. It avoids long derivations of equations and, at the same time, remains mathematically correct and precise. Unnecessary mathematical treatments—which would make the real message difficult to digest—are wisely replaced by the combination of clear textual explanations and illustrations, comprising hundreds of plain drawings, graphs, and photos.

The essential mathematics is summarized in appendix A. In appendix B, we can even read a chapter on relativity. That section, with its three and a half pages, is the shortest discussion of both special and general relativity I have ever read. Readers who first want to see pictures depicting the beauty of the world of astronomy should start their exploration of the book with its 34 color photographs of various celestial themes. Those who want to find a particular topic can use the detailed index of names and subjects.

Fundamental Astronomy is an excellent work in the field of astronomy. When I start reading a chapter, I can hardly put it down (though the hardcover book, with 510 pages of acid-free paper, weighs almost 1.5 kilograms). And, this book does not have an astronomical price; it is affordable even for students. I recommend this book for any higher-education astronomy classes and to all those who are interested in astronomy.

—Balázs Pintér, Solar System Physics Group, Institute of Mathematics and Physics, Aberystwyth University, Aberystwyth, UK; E-mail: b.pinter@aber.ac.uk

ABOUT AGU

Outstanding Student Paper Awards

The following members received Outstanding Student Paper Awards at the 2007 AGU Fall Meeting, in San Francisco, Calif.

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Cryosphere (C)

Michael J. Krawczynski, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program, Cambridge, Mass., *Constraints on melt-water flux through the West Greenland ice-sheet: Modeling of hydrofracture drainage of supraglacial lakes.*

Sasha Peter Carter, University of Texas at Austin, *Ice flow history, basal melt, and hydraulic connections in the Dome C Lake District headwaters over the last glacial cycle inferred from hydropotential, internal layers, and basal reflectivity in airborne radar sounding data.*

Mineral and Rock Physics (MRP)

Ludmila Adam, Colorado School of Mines, Golden, *Laboratory measurements and modeling of seismic attenuation in saturated limestones.*

Amelia Bengston, University of Wisconsin-Madison, *Fe spin crossover in lower mantle materials: A first-principles study.*

Kevin P. Driver, Ohio State University, Columbus, *Quantum Monte Carlo study of the elastic instability of stishovite under pressure.*

Tanima Dutta, Stanford University, Stanford, Calif., *Seismic response of carbonate cemented sandstones.*

Leslie A. Hayden, Rensselaer Polytechnic Institute, Troy, N. Y., *Grain boundary diffusion of carbon in mantle minerals.*

Zhu Mao, Princeton University, Princeton, N. J., *Single-crystal elasticity of hydrous wadsleyite to 12 GPa.*

Yoichi Nakajima, Tokyo Institute of Technology, Japan, *Effect of hydrogen and carbon on the melting temperature of the core.*

Lara O'Dwyer, University of California, Davis, *Numerical simulations of falling sphere viscometry experiments.*

Richa, Stanford University, Stanford, Calif., *Transport properties at different scales using digital rocks.*

Emiko Sugimura, Tokyo Institute of Technology, Japan, *High-temperature compression of ferropericlase and effect of temperature on iron spin transition.*

Seismology (S)

Bettina Allmann, University of California, San Diego, La Jolla, *A high-frequency secondary event during the 2004 M6.0 Parkfield earthquake.*

Antonella Cirella, Istituto Nazionale di Geofisica e Vulcanologia, Rome, *Using a global search inversion to constrain earthquake kinematic rupture history and to assess model uncertainty.*

Kevin C. Eagar, Arizona State University, Tempe, *Receiver function imaging of upper mantle discontinuities beneath the Oregon High Lava Plains and surrounding regions.*

Jennifer D. Eccles, University of Cambridge, Cambridge, UK, *Wide angle converted shear wave analysis of North Atlantic volcanic rifted continental margins.*

Jean E. Elkhoury, University of California, Los Angeles, *Correlations and non-predictability in the time evolution of earthquake ruptures.*

Eileen L. Evans, University of California, Berkeley, *Linking faults: Subsurface creep on a contiguous fault structure connecting the Hayward and Calaveras faults.*

Aron J. Meltzner, California Institute of Technology, Pasadena, *Coseismic, postseismic, and interseismic deformation, and long-term segmentation near the boundary of the 2004 and 2005 Sunda megathrust ruptures.*

Hiroyuki Noda, Kyoto University, Kyoto, Japan, *Transition to pulse-like rupture, with and without inclusion of evolving temperature and pore pressure, when accounting for extreme weakening at high slip rates.*

Daniel B. Peter, Institute of Geophysics, ETH Zurich, Zurich, Switzerland, *Surface wave tomography: Where does ray theory break down on a global scale?*

Zuihong "Kathy" Zou, Saint Louis University, St. Louis, Mo., *An analysis of small-scale heterogeneity in the mantle with PKP precursors recorded at IMS arrays using a seismic phonon method.*

Space Physics and Aeronomy (SPA)

Morris Cohen, Stanford University, Stanford, Calif., *Geometric modulation: A new method of ELF/VLF wave generation with continuous HF heating of the auroral electrojet.*

Wen Li, University of California, Los Angeles, *Calculation of path-integrated growth of whistler-mode chorus waves with the HOTRAY code based on CRRES observation.*

Chia-Lin Huang, Boston University, Boston, Mass., *Quantifying ULF waves in the inner magnetosphere and their effects on radiation belt electrons.*

Seth G. Claudepierre, University of Colorado, Boulder, *Discrete, global ULF modes in the Lyon-Fedder-Mobarry (LFM) MHD simulation.*

Akimitsu Nakajima, Nagoya University, Nagoya, Japan, *Broadband electrons during storm-time substorm: Simultaneous FAST and Double Star observations.*

Hui Zhang, Boston University, Boston, Mass., *Multiple cusps under northward IMF conditions: Observations and MHD simulations compared.*

Yohei Miyake, Kyoto University, Kyoto, Japan, *Numerical analysis on electric field antennas in space plasma environment via electromagnetic particle-in-cell simulation.*

Peter Hunana, University of California, Riverside, *Density fluctuations in the solar wind: Effects of nearly incompressible theory.*

Andrew Jordan, Boston University, Boston, Mass., *GCR modulation by small-scale features in the interplanetary medium.*

Linghua Wang, University of California, Berkeley, *First results on impulsive SEP events from the STEREO IMPACT suprathermal electron (STE) instrument.*

Tectonophysics (T)

Kaushik Bandyopadhyay, Stanford University, Stanford, Calif., *Effect of fluid on seismic anisotropy.*

Birte-Marie Ehlers, Alfred Wegener Institute, Bremerhaven, Germany, *Constraints on a palaeobathymetric model of the northern North Atlantic.*

Daniela Berger, Alfred Wegener Institute, Bremerhaven, Germany, *Seismic studies along the East Greenland margin between 72°N–81°N.*

Veronica Arrigoni, Texas A&M University, College Station, *Is there evidence for recent compression along the Northwind Ridge and Chukchi Borderlands?*

Carl Henrik Pettersson, Stockholm University, Sweden, *U-Pb zircon provenance of meta-sedimentary basement of the northwestern terrane, Svalbard: A central East Greenland correlation.*

Justin R. Brown, Stanford University, Stanford, Calif., *Extracting low frequency earthquakes from tremor.*

Ana Cristina Aguiar, Central Washington University, Ellensburg, *Tremor constraints on moment release during the 2007 ETS from surface and borehole seismometers.*

Masato Fukuda, Nagoya University, Nagoya City, Japan, *Precursory slow crustal deformation before short-term slow slip event in January 2006, recorded at Shingu borehole station southern Kii Peninsula.*

Attreyee Ghosh, State University of New York at Stony Brook, *A best-fit lithosphere-mantle coupling model constrained by plate motions and the velocity gradient tensor field in the plate boundary zones.*

Violaine Combier, Institut de Physique du Globe de Paris, France, *Three-dimensional geometry of magma chamber roof and faults from 3D seismic reflection data at the Lucky Strike Volcano, Mid-Atlantic Ridge.*

Alan Aitken, Monash University, Melbourne, Australia, *Grenville-era crustal architecture of central Australia, and its importance in constraining Rodinia models.*

Duane E. DeVecchio, University of California, Santa Barbara, *The role of transverse faults in accommodating lateral propagation of faults and folds: Evidence from geomorphic and structural analysis of active folding in the Camarillo Fold Belt, Ventura County, California.*

Margaret A. Popek, Summer of Applied Geophysical Experience, University of Rochester, Rochester, N. Y., and Pennsylvania State University, University Park, *Depth to detachment estimates for the Tanos and West Tanos Faults, Hagen Embayment, New Mexico.*

Joshua A. White, Stanford University, Stanford, Calif., *Stabilized low-order finite elements for simulating coupled solid deformation and fluid flow in fault zones.*

Olaf Zielke, Arizona State University, Tempe, *Effect of fault roughness on scaling relationships among earthquake magnitude and rupture characteristics.*

Fushen Liu, Stanford University, Stanford, Calif., *An extended finite element algorithm for cracks with rate- and state-dependent coefficient of friction.*

Kuniyo Kawabata, University of Tokyo, Japan, *Preferential acceleration of pressure solution creep of shear zones in shale of subduction zone.*

Luiza Angheluta, University of Oslo, Norway, *Solid-solid phase transformation: Roughening of stylolites.*

Elizabeth L. Templeton, Harvard University, Cambridge, Mass., *Localization of deformation in elastic-plastic analysis of dynamic shear rupture propagation.*

Elisa J. Kagan, Hebrew University of Jerusalem and Geological Survey of Israel, Jerusalem, *A tale of two cataclysmic earthquakes: 39 and 52 kyr BP, Dead Sea Transform, Israel; a multi-archive study.*

Nadaya Cubas, Ecole Normale Superieure, CNRS, Paris, *Predicting folding sequences based on the maximum rock strength and mechanical equilibrium.*

Ian Mynatt, Stanford University, Stanford, Calif., *Characterization of fracturing and fracture reactivation during folding at Raplee Ridge, UT.*

Pablo F. Sanz Rehermann, Stanford University, Stanford, Calif., *Finite element modeling of fracture reactivation and bedding slip during folding.*

Ran Holtzman, University of California, Berkeley, *Deformations of sediments via grain-scale simulations: A quasi static approach.*

George W. Greene, University of California, Santa Barbara, *Experimental investigation of the dissolution of quartz by muscovite mica surfaces: Implications for pressure solution.*

Marcus Ebner, University of Mainz, Mainz, Germany, *Scaling of natural stylolites and their use as stress-depth gauges.*

Allen L. Husker, University of California, Los Angeles, *Tomography of the subducting Cocos plate in central Mexico: Images of a truncated slab.*

Igor Stubailo, University of California, Los Angeles, *Shear wave splitting measurements and interpretation beneath Acapulco-Tampico transect in Mexico.*

Min Chen, California Institute of Technology, Pasadena, *Toward adjoint tomography of the Japan subduction zone.*

Ikuko Wada, University of Victoria, Victoria, British Columbia, Canada, *Comparative study of subduction zone thermal structure: Implications for slab dehydration and fluid supply for mantle wedge serpentinization and arc volcanism.*

Volcanology, Geochemistry, and Petrology (V)

Tjarda J. Roberts, University of Cambridge, Cambridge, UK, *Volcanic plume chemistry: Formation of BrO, ClO, and OClO.*

Jay A. Barr, Massachusetts Institute of Technology, Cambridge, *Shallow mantle melting beneath Newberry volcano, central Oregon, USA.*

Abigail L. Bull, Arizona State University, Tempe, *Using a new multi-discipline approach to predict seismic tomography from geodynamical models of mantle convection.*

Michiel van Dongen, Monash University, Clayton, Australia, *Ancient crust in the world's youngest giant porphyry Cu-Au deposit, Ok Tedi, Papua New Guinea.*

Todd A. Bianco, University of Hawai'i, Honolulu, *Geochemical variations at a ridge-centered plume caused by variable melting of a veined mantle.*

Hannah R. Dietterich, Pomona College, Claremont, Calif., and Oregon State University, Corvallis, *Sulfur yield of the 1600 eruption of Huaynaputina determined by apatite compositions.*

MEETING ANNOUNCEMENTS

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■ 24–28 June 2008 **International Conference on Groundwater and Climate in Africa**, Kampala, Uganda. Sponsors: Institute of Geosciences and Natural Resources; Groundwater Management Advisory Team; International Atomic Energy Agency; others. (R. Taylor, Department of Geography, University College London, Gower Street, London WC1E 6BT, UK; Tel.: +44-0-207-679-0591; Fax: +44-0-207-679-0565; E-mail: r.taylor@geog.ucl.ac.uk; Web site: http://www.gwclim.org/)

The conference aims to enhance and develop networks of water and climate scientists. It also seeks to engage policy makers so that knowledge gained through research can be translated into practical strategies that help communities mitigate, or adapt to, the impacts of climate change. Conference topics include the impact of climate variability and change on groundwater-based livelihoods and on groundwater and groundwater-fed ecosystems, the estimation of groundwater resources and demand under a changing climate, and groundwater management.

■ 8–11 July 2008 **2008 Seismic Engineering International Conference Commemorating the 1908 Messian and Reggio Calabaria Earthquake (MERCEA 2008)**, Reggio, Calabria, Italy. Sponsors: Associazione Geotecnica Italiana; Anti-Seismic Systems International Society; International Geosynthetics Society; others. (D. Gioffrè, Dipartimento di Meccanica e Materiali, Facoltà di Ingegneria, Feo di Vito, Reggio, Calabria, Italy 89122; Tel.: +39-0965-875221; Fax: +39-0965-875201; E-mail: mercea08@unirc.it; Web site: http://www.mercea08.org/)

In this earthquake engineering and geotechnics conference, topics include site characterization, microzonation and site effects, soil liquefaction and liquefaction countermeasures, Earth-retaining structures and geosynthetics, and urban planning and policies for seismic risk reduction.

■ 11 July 2008 **Fourth National Integrity in Science Conference: Rejuvenating Public Sector Science**, Washington, D. C., USA. Sponsors: Center for Science in the Public Interest (CSPI); Climate Science Watch; Canadian Association of Physicians for the Environment; others. (M. Goozner, Center for Science in the Public Interest, 1875 Connecticut Avenue, NW, Suite 300, Washington, DC 20009-5728, USA; Tel.: +1-202-332-9110; Fax: +1-202-265-4954; E-mail: mgoozner@cspinet.org; Web site: http://cspinet.org/integrity/conflictedscience_conf.html)

The conference goal is to forge an agenda for independent, regulatory science and for protecting public-sector scientists from outside influence. Session topics include unleashing government research to tackle the climate crisis, empowering science and scientists at federal agencies, and reducing conflicts of interest on advisory committees.

■ 3–8 August 2008 **International Radiation Symposium (IRS 2008)**, Foz do Iguaçu, Brazil. Sponsors: International Radiation Commission; International Association of Meteorology and Atmospheric Sciences; Universidade de São Paulo Instituto de Astronomia, Geofísica e Ciências Atmosféricas; others. (T. Domareski, Naipi Travel, Travel Solutions, Grupo Naipi Av. Paraná, 974 - Ed. Empresarial Naipi, Foz do Iguaçu, Brazil CEP 85-852-000; Tel.: +55-45-3521-9400; Fax: +55-45-3521-9414; E-mail: secretariaeventos@travelsolutions.com.br; Web site: http://www.irs2008.org.br/site/index.php)

The symposium will provide a venue to present results about current problems in atmospheric radiation. Topics include radiative transfer theory and modeling, molecular and particle radiative properties, general remote sensing, satellite measurements, and the interaction of the biosphere and atmosphere.

■ 22–26 August 2008 **Sixth International Congress of Arctic Social Sciences (ICASS VI)**, Nuuk, Greenland. Sponsor: International Arctic Social Sciences Association (ICASS). J. C. Kleist; E-mail: jack@adm.uni.gl; Web site: http://www.iassa.gl/icass6/icass6.htm)

Conference topics include social issues and sustainable development in expanding the oil and gas activities in the Arctic, and the impact of oil and gas activity on people in the Arctic.

■ 21–24 September 2008 **Association of Earth Science Editors Annual Meeting**, Flagstaff, Arizona, USA. Sponsors: Association of Earth Science Editors; Clear Creek Associates; Columbia Analytical Systems; others. (T. Overton; E-mail: toverton@gia.edu; Web site: http://www.aipg.org/2008/AIPG-AHS-3IPGC.htm)

The conference goal is to strengthen the profession of Earth science editing. Topics include promoting the exchange of ideas regarding the selection, editing, and publication of research manuscripts, journals, serials, periodicals, and maps pertaining to the Earth sciences. Abstract deadline is 28 July.