

tors at Argonne National Laboratory and Notre Dame.

NSF has awarded JINA \$10 million and the magnetic self-organization center \$11.25 million over five years. JINA's founding members are Notre Dame, Michigan State, and the University of Chicago, which have since formed strong ties with Argonne, the University of Arizona in Tucson, and the Santa Barbara and Santa Cruz campuses of the University of California.

The magnetic self-organization center will use its NSF money—plus \$500 000 a year from the US Department of Energy for the center's national lab participants, PPPL and Lawrence Livermore National Laboratory—mainly for hiring postdocs and graduate students and facilitating communication among center members. In addition to Madison, Princeton, and LLNL, the members are the University of Chicago, Swarthmore College, and the La Jolla, California, branch of Science Applications International Corp. Because of their strong fusion programs, the four major experiments involved—the MRX, Madison Symmetric Torus, Swarthmore Spheromak Experiment, and Sustained Spheromak Physics Experiment (at LLNL)—are on DOE's books.

Toni Feder

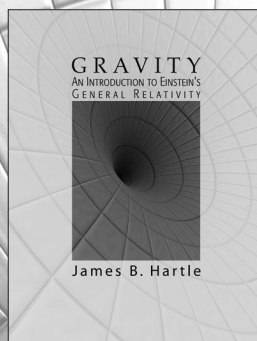
News Notes

Cosmic Vision contracts. The European Space Agency announced in November that unexpected expenses have forced it to cancel Eddington, a combined planet-seeking and asteroseismology mission, and scale back Bepi-Colombo, a mission to Mercury with the Japanese space agency JAXA.

Without Eddington, says the Norwegian Space Centre's Bo Andersen, a member of ESA's scientific program committee, "we will not get an unbiased number of the abundance of Earth-like planets in our galaxy." The asteroseismology loss is even larger, he adds, because "we will not get the expected increase—factors of 10 to 1000—in accuracy of central parameters of stellar evolution, age, element abundances, [or] internal rotation of several hundred thousand stars." Eddington was added in 2002 to ESA's Cosmic Vision, the agency's space exploration plans through 2012 (see *PHYSICS TODAY*, August 2002, page 24). Bepi-Colombo will still fly, but will be delayed by about two years. More painful, a planned lander has been scrapped, reducing the mission to two orbiters.

Chief among the added costs that

Instant classics from Addison-Wesley



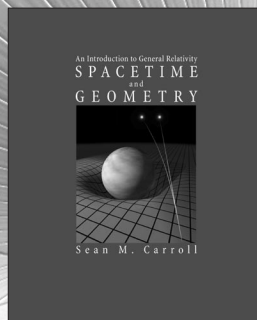
Gravity: An Introduction to Einstein's General Relativity

by James B. Hartle
© 2003 • ISBN 0-8053-8662-9

Renowned relativist James B. Hartle's "physics first" approach provides a fluent and accessible introduction that uses a minimum of new mathematics and a wealth of applications, making this fundamental theory accessible to all physics majors.

"This is an excellent introduction to general relativity... It fills a real gap in the literature for an undergraduate or graduate student course book."

—Stephen Hawking,
University of Cambridge



Spacetime and Geometry: An Introduction to General Relativity

by Sean Carroll
© 2003 • ISBN 0-8053-8732-3

Carroll's accessible text leads graduate students from the physics of flat spacetime (special relativity) through differential geometry and Einstein's equations and on to black holes, gravitational radiation, and cosmology.

"This book is a gem... Carroll gives a clear, well-motivated, and lively development of general relativity."

—Alan Guth,
Massachusetts Institute of Technology



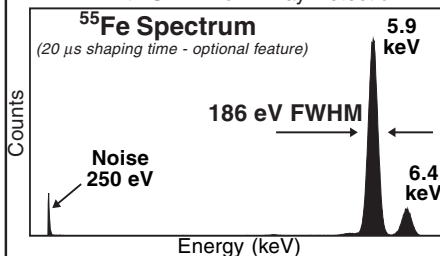
www.aw-bc.com

Circle number 12 on Reader Service Card

X-Ray and Gamma Ray Detectors

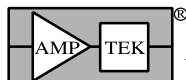
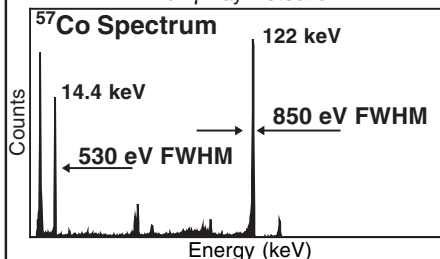
XR-100CR

With Si-PIN for X-Ray Detection



XR-100T-CdTe

With Cadmium Telluride (CdTe)
for γ -Ray Detection



AMPTEK INC.

6 De Angelo Drive, Bedford, MA 01730-2204 U.S.A.
Tel: +1 781 275-2242 Fax: +1 781 275-3470
e-mail: sales@amptek.com www.amptek.com

Solid State Design No Liquid Nitrogen!!



XR-100CR X-Ray Detector and Power Supply shown with Amptek MCA8000A 'Pocket MCA' and a laptop computer.

APPLICATIONS

- Fluorescence
- OEM
- Process Control
- Environmental Monitors
- Nuclear Medicine
- Lead Detectors
- X-Ray Tube Beam Monitor
- Nuclear Plant Monitors
- Vacuum Applications
- Portable Instruments
- Semiconductor Processing
- Sulfur in Oil & Coal Detection
- Plastic & Metal Separation
- Nuclear Safeguards Verification
- Space & Astronomy
- Teaching and R&D
- Art & Archaeology

Circle number 13 on Reader Service Card

necessitated the cuts are those incurred from delays to the Rosetta comet mission because of the failed Ariane 5 launcher (see PHYSICS TODAY, March 2003, page 28). Also taking a toll were making early payments to keep the European space industry afloat and covering expenses for ESA member states and other partner organizations that defaulted on their contributions to various missions.

The cuts to Eddington and Bepi-Colombo save around €450 million (\$536 million). The financial juggling also includes a loan of €100 million to keep Rosetta on track for launch next month. The revised program is affordable, says Andersen, but it is "a scientifically unacceptable program because it kills off fields where Europe is in the lead." **TF**

Telescope time for sale. Seeking access to the stars? For \$150, you can buy an hour on the 32-inch telescope at Tenagra Observatories, 60 kilometers south of Mt. Hopkins in Arizona. When the 24-inch telescope arrives, it will be available for \$100 an hour.

The telescopes are completely ro-

CARY CLEBORAD/SCITECH



botic. Among the current projects by outside users are searches for asteroids, variable phenomena such as active galactic nuclei, and optical signals from gamma-ray bursters. Michael Schwartz, the observatories' director, founder, and owner, focuses on supernovae and says that more than 40 have been discovered with Tenagra telescopes.

Schwartz earned his fortune from a software company that he started in 1981 and sold, propitiously, in 1997. Two years later, he used his own money to create Tenagra; the name is taken from a character in a *Star Trek* episode. "I am a renegade academic. I've been interested in astronomy since I was a child," says Schwartz, who holds degrees in archaeology, physics, and physical anthropology—but not astronomy. **TF**

New CTIO chief. Alistair Walker is the new director of the Cerro Tololo Inter-American Observatory in La Serena, Chile. He took the reins of the US National Optical Astronomy Observatory's outpost in the Southern Hemisphere on 8 November.

Perhaps best known for his work measuring the distance to the Large Magellanic Cloud, Walker first went to the CTIO in 1977. Except for seven years at the South African Astronomical Observatory, he's been there ever

since, and served for the past four years as deputy director. The observatory operates the 4-meter Blanco telescope, will celebrate the dedication of the 4-meter Southern Astrophysical Research telescope (SOAR) in April, is building an adaptive optics facility for SOAR, and is conducting site tests for the Thirty Meter Telescope and the Large Synoptic Survey Telescope.

Walker succeeds Malcolm Smith, who stepped down after a decade in the job. Smith will stay on as director of the AURA Observatory in Chile, which provides operational support for the CTIO and the Gemini South telescope. As president of the International Astronomical Union's commission for the protection of existing and potential astronomical sites, Smith plays a leading role in the effort to protect ground-based observatories worldwide from light pollution, radio frequency interference, and light from orbiting space debris. **TF** ■

WEB WATCH

<http://www.advancedphysics.org>

Physicist Fernanda Foerter has created **Advanced Physics Forums**, a site where her fellow graduate students can exchange ideas about things physical. More than 100 people have signed up to use the moderated site since its launch last August.

<http://www.dctech.com/physics/errata>

Although he now works for a software engineering company, former physics professor Doug Craigen hasn't lost his interest in teaching physics. Among his hobbies is collecting items for his site **Physics Textbook Errata**.

<http://www.foresight.org/Nanomedicine/Gallery/Captions>

More science fiction than science fact, the **Nanomedicine Art Gallery** nevertheless reflects contemporary views of how medical nanorobots and other nanomedical devices might one day appear. Robert Freitas of Zyvex Corp curates the online exhibition, which is hosted by the Foresight Institute.

To suggest topics or sites for Web Watch, please visit <http://www.physicstoday.org/suggestwebwatch.html>.

Compiled and edited by Charles Day



Electronics for Research Environments

OXFORD
INSTRUMENTS

Electronics products available from Oxford Instruments Direct enable you to control environments with ease and efficiency. Magnet power supplies, temperature controllers and cryogenic level meters can be supplied with intuitive user interfaces and flexible programmability.

Search our updated superconductivity section online at www.oxford-instrumentsdirect.com to view our comprehensive product range.

- Magnet power supplies
- Temperature controllers
- Upgrades, cards and leads
- Dilution refrigerator electronics
- Intelligent cryogen level meters
- Racks and cabling

To place your order, contact us now

North America tel: (888) 553 6616 email: oidirect.supercon@ma.oxinst.com

Rest of World tel: +44 (0) 1865 393 300 email: oidirect.supercon@oxinst.co.uk

Circle number 14 on Reader Service Card