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Announcement: Release of Open Access (FREE TO READ)

695 **The physics of premelted ice and its geophysical consequences** — J. G. Dash, A. W. Rempel, J. S. Wettlaufer

In phenomena as diverse as the motion of glaciers and the dynamics of cloud formation the existence of a thin melted layer on the surface of ice plays an important role. This review surveys the historical background of the surface premelting of ice, the fundamental thermodynamics and electrodynamics underlying it, computational studies, and a whole spectrum of geophysical phenomena of current research interest.

743 **Addendum: Non-Fermi-liquid behavior in *d*- and *f*-electron metals** — G. R. Stewart

This addendum is a compilation of resistivity, susceptibility, and specific heat data that have appeared since the original review [Rev. Mod. Phys. **73**, 797–855 (2001)] on this subject. The tabular inclusion of approximately 60 new systems and 70 new references indicates continuing progress in the characterization of non-Fermi-liquid behavior in *d*- and *f*-band metals.

755 **Experimental astrophysics with high power lasers and *Z* pinches** — Bruce A. Remington, R. Paul Drake, Dmitri D. Ryutov

Although astrophysical environments often involve extreme physical conditions far removed from anything readily found on Earth, some of their properties can now be mimicked in the laboratory using high-intensity lasers or *Z*-pinch plasma machines. Using these devices, experimenters have begun to explore samples of matter in states relevant to the physics of supernovae, supernova remnants, interstellar shock waves, photoevaporated molecular clouds, photoionized plasmas, and planetary interiors. This review article summarizes the current state of high energy density laboratory astrophysics.

809 **Theory of ferromagnetic (III,Mn)V semiconductors** — T. Jungwirth, Jairo Sinova, J. Mašek, J. Kučera, A. H. MacDonald

Diluted semiconductors are of interest from both fundamental and applied points of view, and may soon lead to spintronics devices with new functionalities. This review discusses the microscopic origins of ferromagnetism in such systems, as well as material science aspects that are crucially related to the magnetic properties.

865 **Electronic structure calculations with dynamical mean-field theory**

G. Kotliar
S. Y. Savrasov
K. Haule
V. S. Oudovenko
O. Parcollet
C. A. Marianetti

The dynamical mean-field theory was originally conceived to understand strong correlation physics in simplified models, such as the Hubbard model. It is now beginning to be applied to make realistic theories of the electronic structure in physical materials. This review outlines the modern practical methodology and discusses some examples.

953 ***Colloquium*: The glass transition and elastic models of glass-forming liquids**

Jeppe C. Dyre

The field of viscous liquids and the glass-forming transition has recently become an accepted branch of condensed-matter physics. A central unsolved problem is the dramatic temperature dependence of the relaxation time of glass-forming liquids. In this Colloquium various "elastic" models that connect the fast and slow degrees of freedom are used to analyze the glass transition.

973 ***Colloquium*: Electronic transport in single-crystal organic transistors**

M. E. Gershenson
V. Podzorov
A. F. Morpurgo

Small-molecule, organic semiconductors are expected to be superior to inorganic ones for applications requiring mechanical flexibility, large area coverage, and inexpensive mass production. Current understanding of charge transport in such devices, however, is limited. As reported in this Colloquium, the recent development of single-crystal organic field-effect transistors with reduced disorder provides a unique tool for exploring the fundamental properties governing the operation of organic electronic devices.

991 **Tests of the standard electroweak model in nuclear beta decay**

Nathal Severijns
Marcus Beck
Oscar Naviliat-Cuncic

The standard model of elementary particle physics has established itself through its great success in the description of a wealth of physical phenomena. Despite its success, however, many open questions towards its general validity remain. The present article reviews the current status of precision tests of the electroweak model in the low energy sector by considering nuclear beta decay, which is a semileptonic strangeness-conserving process involving to lowest order only the lightest leptons and quarks interacting via exchange of heavy vector bosons. The potential and prospects of such precision measurements, in particular, are emphasized to look for physics beyond the standard model.

1041 **Publisher's Note: Ultracold photoassociation spectroscopy: Long-range molecules and atomic scattering [Rev. Mod. Phys. 78, 483 (2006)]**

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Forthcoming articles