

SFB 608

Einladung zum Kolloquium

- Ort:** Universität zu Köln
II. Physikalisches Institut, Seminarraum 201
- Zeit:** **24. Mai 2006 um 14:30 Uhr**
- Sprecher:** James S. Schilling
Department of Physics, Washington University
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- Thema:** Studies in Superconductivity at Extreme Pressures

High pressure studies have played an important role in the field of superconductivity since the first experiments by Sizoo and Onnes in Leiden in 1925 [1]. A significant extension of the pressure range in the 1960s by Wittig resulted in the discovery of many new superconductors. Of the 52 known elemental superconductors, 23 only become superconducting under sufficiently high pressures, including Si, Y, Fe, O, and Li. Very recently, the transition temperature of Y metal was pushed by 1.2 Mbar pressure to 20 K, a record value for an elemental superconductor. Such enormous pressures are sufficient to even destroy the free-electron character of the conduction electrons in the alkali metals! In addition, experiments utilizing hydrostatic or uniaxial pressure can provide a quantitative test of theory and give information on the pairing interaction. In this talk I will discuss recent experimental results on the alkali metals, Y, CaC_6 , and high-temperature superconductors which illustrate these possibilities.

[1] James S. Schilling in: *Treatise on High Temperature Superconductivity*, J.R. Schrieffer, editor (Springer Verlag, Hamburg, 2006); also, arXiv: cond-mat/0604090.

Gez. Prof. M. Abd-Elmeguid & Prof. J. Mydosh