

FAKULTÄT für PHYSIK  
LUDWIG-MAXIMILIANS-UNIVERSITÄT  
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT  
TECHNISCHE UNIVERSITÄT MÜNCHEN  
MÜNCHEN/GARCHING

## MLL-KOLLOQUIUM

Donnerstag, 23.10.2014, 16<sup>15</sup> Uhr

Seminarraum 127, TUM, Physik II, Erdgeschoss/Nord  
Treffen zum gemeinsamen Kaffee 16 Uhr

Dr. Patrick Reichart

(Universität der Bundeswehr München)

### 3-dimensional Microscopy of Hydrogen and Deuterium at SNAKE

Coincidence analysis of proton-proton scattering events is a powerful tool to measure hydrogen depth profiles with highest sensitivity. Using a microprobe allows lateral imaging in micrometer dimensions. At the microprobe SNAKE we have developed this 3D microscopy of hydrogen and demonstrated a sensitivity, e.g., down to 0.08 at-ppm in Diamond. Only the available energy range of SNAKE and the Garching Tandem accelerator guarantees an application to thick materials with a feasible target preparation. In recent years, we applied this method to various topics like hydrogen storage in metal and minerals. With a new detector setup, the usable proton energy is extended up to 25 MeV and heavy materials like tungsten for fusion reactor divertor material or thick layers of meteorite impact material with melt inclusions could be studied. By the use of a deuterium beam, we are able to perform 3D deuterium microscopy as well and show results from first studies in tungsten. Additionally, a new highly brilliant source for hydrogen and deuterium beams as well as new high-power microbeam slits have been installed to improve the performance of the microprobe.

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