



TECHNISCHE UNIVERSITÄT  
CHEMNITZ

# Institut für Physik Physikalisches Kolloquium



**Mittwoch, 20.12.2017, um 16:00 Uhr**

Ort: Reichenhainer Str. 90;  
Zentrales Hörsaal- und Seminargebäude,  
Raum 2/N013

**Prof. Dr. Mike Downer**

University of Texas at Austin, USA  
Department of Physics

## Plasma-based GeV lepton accelerators

Plasma-based accelerators work by surfing electron or positron bunches on light-speed electron-density waves driven by intense ultrashort laser pulses or charged particle bunches in ionized gas. I will highlight recent advances in single-stage acceleration of lepton bunches to multi-GeV energy, achieved on a tabletop rather than a multi-acre real-estate tract, while maintaining few-percent energy spread, few-femtosecond duration, and sub-milliradian divergence. I will also describe experiments that diagnose the properties of the plasma waves and the electrons they accelerate, and others that convert plasma-accelerated GeV electrons into bright, ultrashort x-ray pulses. Finally, I will comment on technical challenges to realizing compact free-electron lasers and electron-positron colliders based on plasma accelerators.

Alle Zuhörer sind ab 15:45 zu Kaffee und Tee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt:  
Prof. Dr. Dr. h.c. Dietrich R.T. Zahn, Tel. 0371 531-33036



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