



TECHNISCHE  
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# IAP-SEMINAR

## EINLADUNG

Termin: **Dienstag, 22.10.2013 um 16:00 Uhr**  
Ort: **Technische Universität Wien,  
Institut für Angewandte Physik,  
Seminarraum 134A, Turm B (gelbe Leitfarbe), 5. OG  
1040 Wien, Wiedner Hauptstraße 8-10**

Vortragender: **Dr. Nico Stolterfoht**  
Helmholtz-Zentrum für Materialien und Energie, Berlin/D

Thema: **Guided transmission of highly charged ions through insulating nanocapillaries: experiments and simulations**

### Kurzfassung

In the past few years guiding of highly-charged ions through insulating capillaries has received considerable attention. Capillaries in insulating materials keep charges deposited by the incident ions for a relatively long time on the inner capillary wall so that a repulsive electric field is produced in self-organizing manner. This field deflects the following ions at significant distances so that electron capture into the projectile is inhibited. Thus, a large amount of ions are guided in their initial charge state along the capillary even when the capillary axis is tilted with respect to the incident beam direction. After a general introduction of the self-organizing guiding mechanism, experimental results are presented. Scaling laws of guiding for varying energy and charge state of the projectile are discussed. Dynamic properties are analyzed in terms of temporary charge patches within the capillaries and visualized by animations. The experimental results are interpreted by model calculations and simulations showing explicitly the formation of temporary charge patches. The results of the simulations are used to analyze analytic expressions providing pictorial insights into the guiding phenomena.

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*Alle interessierten Kolleginnen und Kollegen sind zu diesem Seminar  
(45 min mit anschließender gemeinsamer Diskussion) herzlich eingeladen.*

*F. Aumayr e.h.  
(Seminar-Chairperson)*

*H. Störi e.h.  
(LVA-Leiter)*