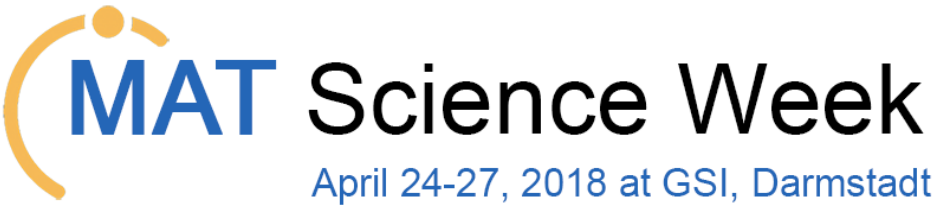

Beitrag ID: **36** Typ: **Oral**

Development of an efficient high-current ion source for Accelerator Mass Spectrometry

Dienstag, 24. April 2018 14:00 (20 Minuten)

A new efficient negative ion source for Accelerator Mass Spectrometry (AMS) is being built to quantify the ratios of long-lived cosmogenic radionuclides in micrometeorites. Measuring these extremely small ratios is at the technological limits of present AMS systems. The new source is designed specifically to provide a higher AMS detection sensitivity by having an optimal ion-optics design, incorporating new concepts for the construction and operation of the Cs ionizer, optimized Cs ion beam currents and Cs vapor transport, as well as the operation with higher cathode voltages than usual. Moreover, its design is modular providing ease of access and simplifying maintenance while providing better mechanical stability. Several source parameters can be controlled and measured during operation to achieve a better source performance. The new source will consist of a auto-aligning modular ionizer, a Cesium supply with active temperature control of the supply tubes, a novel shroud for the Cs supply and a cathode operated at up to -20 kV cathode bias. The design is optimized using COMSOL ion optics simulations, including space charge effects, thermal transport simulations as well as detailed sputter simulations. The authors would like to thank the Federal Ministry of Education and Research of Germany for its financial support (project 05K2016), and the HZDR's Ion Beam Center for its essential contribution to the realization of this project.

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Sitzung Einordnung: Mat Science Week

Track Klassifizierung: Annual Workshop on Ion and Particle Beams (Ionenstrahl Workshop)