INSTITUT FÜR ISOTOPENFORSCHUNG UND KERNPHYSIK
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E I N L A D U N G

zum

I N S T I T U T S S E M I N A R

von

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A thick-target measurement of the cross section of the supernova-nucleosynthesis ^{40}Ca (α,γ)^{44}Ti reaction by accelerator mass spectrometry

The ^{44}Ti ($t_{1/2}$ =59 y) nuclide is considered an important signature of core-collapse supernova nucleosynthesis. ^{44}Ti has recently been observed as live radioactivity by γ-ray astronomy from the Cas A supernova remnant, showing yields larger than expected from current stellar calculations. We investigated in the laboratory the major ^{44}Ti production reaction, ^{40}Ca(α,γ)^{44}Ti (E_{cm} ~ 0.6-1.2 MeV/u) by off-line counting of ^{44}Ti nuclei using accelerator mass spectrometry. The observed yield is significantly higher than inferred from previous prompt γ-spectroscopy experiments and is well reproduced by a microscopic statistical model calculation. The derived astrophysical rate of the ^{40}Ca(α,γ)^{44}Ti reaction is a factor 5-10 higher than calculated in current stellar models and results in an increase of the calculated SN ^{44}Ti yield by a factor ~ 2 over current estimates.

Dienstag**, 29. August 2006, 11:00 Uhr s.t.**

**1090 Wien, Währinger Str. 17, "Kavalierstrakt",
1. Stock, Seminarraum von VERA**

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