HK 34: Nukleare Astrophysik - Poster

Time: Wednesday 14:00–16:00 Location: Foyer Chemie

HK 34.1 Wed 14:00 Foyer Chemie

Simulation of p-process abundances in supernova explosions — •Jens Ebert[1], Iris Dillmann[1,2], Janos Farkas[3], and Zsolt Fülöp[3] — [1]Justus-Liebig-Universität Gießen — [2]GSI Darmstadt — [3]ATOMKI Debrecen

The nucleosynthesis of elements beyond iron is mainly given by neutron capture reactions in s- and r-processes. However 32 stable, proton-rich isotopes between ^{74}Se and ^{196}Hg cannot be produced in that way. These isotopes are accounted to the "p-process", which is in nowadays understanding a superposition of several sub-processes. We have simulated the production of these isotopes from existing s-process seed nuclei via photodisintegration and β^+-decay ("γ-process") with updated experimental reaction rates from [1] KADoNiS (Karlsruhe Astrophysical Database of Nucleosynthesis in Stars) and the JINA reaction library [1,2].

[1]I. Dillmann, J. Ebert, et al., "Stellar (n,γ) cross sections of p-process isotopes - Part 3: Simulation with an updated reaction library"; Phys. Rev. C (in preparation)

[2]I. Dillmann et al., J. Phys. - G: Nucl. Part. Phys. 35 (2008) 014029

HK 34.2 Wed 14:00 Foyer Chemie

Counting Setup for Activation Experiments in Nuclear Astrophysics — •Lars Netterdon, Michael Elvers, Janis Endres, Andreas Hennig, Anne Sauerwein, and Andreas Zilges — Institut für Kernphysik, Universität zu Köln

Experimentally determined proton and α-particle reaction rates are of crucial importance to improve the accuracy of p-process network calculations. The activation method has some clear advantages where it is applicable compared to in-beam measurements, *e.g.*, very low background radiation. Therefore, we developed a new counting setup at the Institute for Nuclear Physics in Cologne equipped with a clover-type HPGe detector consisting of four crystals with a relative efficiency of 120% at E_γ = 1332 keV compared to a standard 7,62 cm × 7,62 cm NaI detector. This provides the possibility to measure coincidences between the crystals or use them in an add-back mode which gives access to cross section measurements in the μb range. In this contribution we illustrate the counting setup and present first results.
Supported by the DFG (ZI 510/5-1) and by the Bonn-Cologne Graduate School of Physics and Astronomy.

HK 34.3 Wed 14:00 Foyer Chemie

Hochpräzise Grundzustands-Halbwertszeitenbestimmung mittels Photoaktivierung * — •Jan Wagner[1], Cathrin Wälzlein[1], Jens Hasper[2], Jan Glorius[1], Sebastian Müller[1], Norbert Pietralla[1], Anne Sauerwein[2], Deniz Savran[1,4,5], Linda Schnorrenberger[1], Kerstin Sonnabend[1,3] und Andreas Zilges[2] — [1]Institut für Kernphysik, TU Darmstadt, Deutschland — [2]Institut für Kernphysik, Universität zu Köln, Deutschland — [3]Institut für Angewante Physik, Goethe-Universität Frankfurt, Deutschland — [4]ExtreMe Matter Institute EMMI and Research Division, GSI Helmholtzzentrum, Darmstadt Germany — [5]Frankfurt Institute for Advanced Studies FIAS, Frankfurt, Germany

Die Isotope ^{99}Mo, ^{180}Ta, ^{184}Re, ^{186}Re, ^{190}Ir und ^{191}Os wurden durch bremsstrahlungsinduzierte (γ,n) Reaktionen am Darmstadt High Intensity Photon Setup (DHIPS) des Superconducting DArmstadt LINear electron ACcelerator S-DALINAC erzeugt. Die Grundzustands-Halbwertszeiten wurden über lange Zeit vermessen, indem der Aktivitätsverlauf mit hochreinen Germaniumdetektoren verfolgt wurde. Durch die lange Messdauer und simultane Fits mehrerer γ-Linien eines Isotops konnten die Halbwertszeiten mit höherer Genauigkeit bestimmt werden. Die Ergebnisse für ^{180}Ta und ^{191}Os zeigen eine Diskrepanz zu den vorliegenden Literaturwerten aus ENSDF in Übereinstimmung mit anderen dort aufgeführten Photoaktivierungsexperimenten.

*Gefördert durch die DFG (SFB 634)