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Neutron capture cross sections of Kr

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%\renewcommand{\rmdefault}{ptm} % to use Times font

\long\def\TITLE#1{{\Large{\bf#1}}}\long\def\AUTHORS#1{ #1\\[3mm]}
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\begin{document}
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\begin{center}
%%%
%%% Title goes here.
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\TITLE{Neutron capture cross sections of Kr}\\[3mm]
%%%
%%% Authors and affiliations are next. The presenter should be
%%% underlined as shown below.
%%%
\AUTHORS{S. Fiebiger[1], B. Baramsai[2], A. Couture[2], S. Mosby[2], J. M. O'Donnell[2], R. Reifarth[1], G. Rusev[2], J. Ullmann[2], M. Weigand[1], C. Wolf[1]}

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\vspace{12pt} % Do not modify

% Enter contact e-mail address here.

\centerline{Contact email: {\it fiebiger@iap.uni-frankfurt.de}}

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%%%
%%% Abstract proper starts here.
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Neutron capture and β^--decay are competing branches of the s-process nucleosynthesis path at ^{85}Kr [1], which makes it an important branching point.
The knowledge of its neutron capture cross section is therefore essential to constrain stellar models of nucleosynthesis.
Despite its importance for different fields, no direct measurement of the cross section of ^{85}Kr in the keV-regime has been performed. The currently reported uncertainties are still in the order of 50\% [2, 3].

Neutron capture cross section measurements on a 4\% enriched ^{85}Kr gas enclosed in a stainless steel cylinder were performed at Los Alamos National Laboratory (LANL). Using the Detector for Advanced Neutron Capture Experiments (DANCE), a 162 times segmented BaF_2 scintillator array. This segmentation combined with a high efficiency allows measurements on small samples of radioactive isotopes.

^{85}Kr is radioactive isotope with a half life of 10.8 years. As this was a low-enrichment sample, the main contaminants, the stable krypton isotpes, ^{83}Kr and ^{86}Kr were also investigated. The material was highly enchriched and contained in pressurized stainless steel spheres.

\bigskip
{\small

\noindent [1] C. Abia et al. Astrophysical Journal, 559:1117 (2001);

\noindent [2] R. Raut et al. Cross-Section Measurements of the 86Kr(g,n) Reaction to Probe the s-Process Branching at 85Kr (2013);

\noindent [3] Z. Y. Bao et al. Atomic Data Nucl. Data Tables, 76:70 (2000)

%\noindent [1] E. Stark, Phys. Journal of the North 83 045801 (2011);

%\noindent
%[2] O. Martell et al. submitted to Solar Physics Letters (2013).}
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%%% End of abstract.
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\end{document}

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