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Isomer beam elastic scattering: $^{26}\text{mAl}(p,p)$ for astrophysics

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%\renewcommand{\rmdefault}{ptm} % to use Times font
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\begin{document}
{\small \it Nuclear Physics in Astrophysics 8, NPA8: 18-23 June 2017, Catania, Italy}
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\begin{center}
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%% Title goes here.
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\TITLE{Isomer beam elastic scattering:  $^{26}\text{mAl}(p,p)$  for astrophysics }\[\3mm]
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%% Authors and affiliations are next. The presenter should be
%% underlined as shown below.
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%%
%% Abstract proper starts here.
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The advent of radioactive {\em ground-state} beams some three decades ago ultimately sparked a revolution in our understanding of nuclear physics.

However, studies with radioactive {\em isomer} beams are sparse and have often required sophisticated apparatuses coupled with the technologies of ground-state beams due to typical mass differences on the order of hundreds of keV and vastly different lifetimes for isomers.

We present the first application of a isomeric beam of $^{26\text{m}}\text{Al}$ to one of the most famous observables in nuclear astrophysics: galactic ^{26}Al .

The characteristic decay of ^{26}Al in the Galaxy was the first such specific radioactivity to be observed originating from outside the Earth some four decades ago.

Since that time, researchers have made enormous efforts in observation, theory, and experiment; yet to this day, the precise origins of ^{26}Al remains elusive.

It is paramount in nuclear astrophysics that the nuclear physics used as inputs to stellar models can reproduce and constrain astronomical observables.

In particular, contrasting with the earlier works, the {\em destruction} of ^{26}Al is now becoming a hotter research topic than its {\em production}, because in recent years the sum of all possible astrophysical sites now tends to overestimate rather than underestimate its production.

We present a newly-developed, novel technique to probe the structure of low-spin states in ^{27}Si .

Using the Center for Nuclear Study low-energy radioisotope beam separator (CRIB), we will report on the measurement of $^{26\text{m}}\text{Al}$ proton resonant elastic scattering conducted with a thick target in inverse kinematics. The preliminary results of this on-going study will be presented for the first time with high statistical precision.

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Session Classification: RIBs in nuclear astrophysics 1