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Scattering process for the system ^{7}Be+^{208}Pb at near-barrier energies

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\begin{document}
\noindent{\underline{The 12th International Conference on Nucleus-Nucleus Collisions, June 21-26, 2015, Catania, Italy}}

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\begin{center}
{\large \bf Scattering process for the system ^{7}Be+^{208}Pb at near-barrier energies}
\end{center}

\begin{center}
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We investigated for the first time the reaction dynamics induced by the weakly-bound projectile ^{7}Be (S_α = 1.584 MeV) on a ^{208}Pb target at three near-barrier energies, namely 37.6, 40.5 and 42.4 MeV. The ^{7}Be Radioactive Ion Beam was produced with an intensity about 2.5 $\times$ 10^{5} pps by means of the facility EXOTIC [1] at INFN-LNL (Italy). Charged reaction products were detected in the angular range θ_{cm} = [55°,165°] with the telescope array EXPADES [2].

Fig. 1 shows the preliminary evaluation of the elastic scattering angular distributions together with the results of the optical model analysis. Fig. 2 presents the reduced reaction cross sections for the systems ^{6,7}Li,^{7}Be + ^{208}Pb [3]. Quite unexpectedly, the ^{7}Be reaction cross section data follow the trend individuated by those measured for the reaction induced by the more tightly-bound mirror nucleus ^{7}Li (S_α = 2.468 MeV) rather than those obtained for the similarly weakly-bound projectile ^{6}Li (S_α = 1.475 MeV).

\begin{figure}[!h]
\begin{minipage}[b]{8cm}
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\begin{center}
\epsfysize=5cm
\epsfbox{Claudio_E1E2E3.eps}
\caption{Elastic scattering angular distributions for the system ^{7}Be + ^{208}Pb.}
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\caption{Reduced reaction cross sections for the systems ^{6,7}Li,^{7}Be + ^{208}Pb.}
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[1] F. Farinon \emph{et al.}, Nucl. Instr. Meth. B {\bf 266}, 4097 (2008).
[2] E. Strano \emph{et al.}, Nucl. Instr. Meth. B {\bf 317}, 657 (2013).
[3] N. Keeley \emph{et al.}, Nucl. Phys. A {\bf 571}, 326 (1994).
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