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New direct measurement of the 10B(p,alpha)7Be reaction with the activation technique

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{\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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%%% Authors and affiliations are next. The presenter should be
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%%%
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%%% Abstract proper starts here.
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Boron plays an important role in astrophysics and, together with lithium and beryllium, is a probe of stellar structure during the pre-main sequence and main-sequence (MS) phases. Lithium, beryllium and boron are quickly burned through (p, α) reactions at temperatures higher than 2.5 MK. In particular, following the time evolution of the relative N(^{11}B)/N(^{10}B) abundance it is possible to trace mixing phenomena in the early phases of stellar evolution [1].\\
In this context, the ^{10}B(p,α)^{7}Be reaction is of particular interest. At Gamow energies, its cross section is dominated by the contribution of the 8.699 MeV state in ^{11}C, corresponding to an s-wave resonance centred at about 10 keV. Recent measurements of the ^{10}B(p,α_0)^{7}Be reaction with the Trojan Horse Method (THM) [2] have provided the bare-nucleus S-factor in correspondence of the 10 keV resonance, without the needs of extrapolation procedures. In order to normalize the Trojan horse data, direct cross section measurements are still needed.\\
To give a precise normalisation to indirect data, a measurement of the ^{10}B(p,α)^{7}Be cross section was performed at Legnaro National Laboratories (LNL). As a matter of fact, a normalization problem arose in previous works due to discrepancies in the results of different experimental datasets. At LNL the cross section was determined with the activation technique measuring the activated samples at a low-background counting facility. The analysis of that experiment is now complete [3] and a detailed report of the obtained results will be presented in this contribution.
\bigskip
{\small

\noindent [1] L. Lamia et al., Astrophys. J. 811, 99 (2015).\\
\noindent [2] C. Spitaleri et al., Phys. Rev. C 90, 035801 (2014)\\
\noindent [3] A. Caciolli et al. Eur. Phys. J. A (2016) 52, 136\\
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%%% End of abstract.
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