

# SPECTROSCOPY OF ${}^9\text{Be}$ CLOSE TO THE PROTON THRESHOLD USING ${}^8\text{Li}(p,p)$ , ${}^8\text{Li}(p,d)$ AND ${}^8\text{Li}(p,\alpha)$ REACTIONS

A. Lépine-Szily<sup>1</sup>, E. Leistenschneider<sup>1</sup>, P. Descouvemont<sup>2</sup>, R. Lichtenthäler<sup>1</sup>, V. Guimarães<sup>1</sup>, D. R. Mendes Jr.<sup>3</sup>, P. N. de Faria<sup>3</sup>, A. Barioni<sup>4</sup>, K. C. C. Pires<sup>1</sup>, V. Morcelle<sup>2</sup>, R. Pampa Condori<sup>1</sup>, M. C. Moraes<sup>3</sup>, V. Scarduelli<sup>1</sup>, E. Rossi<sup>1</sup>, V. A. Zagatto<sup>1</sup>, H. Santos<sup>3</sup>, V. A. P. Aguiar<sup>1</sup>, T. Britos<sup>5</sup>, M. Assunção<sup>5</sup>, J. C. Zamora<sup>6</sup>, J. Duarte<sup>1</sup>, J. M. B. Shorto<sup>7</sup>

<sup>1</sup> *Instituto de Física, Universidade de São Paulo, São Paulo, Brazil*

<sup>2</sup> *Université Libre de Bruxelles, Bruxelles, Belgium*

<sup>3</sup> *Universidade Federal Fluminense, Niterói, Brazil*

<sup>4</sup> *Universidade Federal da Bahia, Salvador, Brazil*

<sup>5</sup> *Universidade Federal de São Paulo, Diadema, Brazil*

<sup>6</sup> *GSI, Darmstadt, Germany*

<sup>7</sup> *Instituto de Pesquisas Energéticas e Nucleares, São Paulo, Brazil*

Proton-induced reactions are important in the study of the destruction of  ${}^8\text{Li}$  in some astrophysical scenarios [1-3]. In this work, the cross sections for the reactions  ${}^8\text{Li}(p,p)$ ,  ${}^8\text{Li}(p,\alpha)$  and  ${}^8\text{Li}(p,d)$  were measured in inverse kinematics between  $E_{\text{cm}} = 0.7$  and 2.2 MeV. A highly pure  ${}^8\text{Li}$  beam selected by the RIBRAS System [4] in the Pelletron Laboratory (IF-USP), São Paulo, was used impinging on a thick  $[\text{CH}_2]_n$  target, a proton-rich plastic. The reaction products were detected by a telescope formed by silicon surface barrier detectors placed at a forward angle. The measured excitation functions were analysed through the R-matrix methodology and could provide informations (resonance energies, spins, parities, partial decay widths for the three observed channels) about several poorly known high-lying resonances of the  ${}^9\text{Be}$  compound nucleus. The importance of other decay channels and the consequences of the studied reactions on nucleosynthesis are also discussed.

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[3] D. R. Mendes Jr. et al., *Phys. Rev. C* 86, 064321 (2012).

[4] R. Lichtenthäler et al., *Europ. Phys. Jour. A* 25, 733 (2005)