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Alpha-cluster resonances in ^{23}Na near ^{19}F+α threshold. B.W. GREEN, G.V. ROGACHEV, E. JOHNSON, A.M. CRISP, K.W. KEMPER, Dept. of Physics, Florida State University, V.Z. GOLDBERG, A. MUKHAMEDZHANOV, Cyclotron Institute, Texas A&M University, M. LA COGNITA, R.G. PIZZONE, S. ROMANO, C. SPITALERI, A. TUMINO, Labratori Nazionali del Sud-INFN, Catania, Italy — Abundance of ^{19}F in AGB stars is enhanced by a factor of 2-30 with respect to the solar abundance [1]. This observation provides strong evidence that ^{19}F is produced in the interior of AGB stars. It was shown in [2] that the final abundance of ^{19}F depends strongly on the ^{19}F(α,p) reaction rate. No experimental data is available for the ^{19}F(α,p) reaction cross section below E_α = 1.3 MeV. Extrapolation of the ^{19}F(α,p) cross section down to the relevant energy range is uncertain due to the unknown properties of relevant resonances in ^{23}Na. It is the main goal of this work to identify resonances in ^{23}Na, which may be important for the ^{19}F(α,p) reaction. Resonances in ^{23}Na were populated with a ^{19}F(^{6}Li,d)^{23}Na reaction, using a 23 MeV ^{6}Li beam. Deuterons were detected at forward angles in coincidence with protons from the proton decay of ^{23}Na resonances. Angular correlation between deuterons and protons allows for spin-parity assignments for the populated resonances while the magnitude of the ^{19}F(^{6}Li,d) cross section gives information regarding the α spectroscopic factor of the ^{23}Na. [1] A. Jorissen, et al., A&A, 261 (1992) 164. [2] M. Lugaro, et al., ApJ, 615 (2004) 934.

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