The ^{22}Ne$(p,\gamma)^{23}$Na reaction from 800 to 1900 keV

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The NeNa cycle affects the synthesis of elements with $A = 20 - 25$ in asymptotic giant branch stars, classical novae and type Ia supernovae. The ^{22}Ne$(p,\gamma)^{23}$Na reaction is a part of that cycle. Its thermonuclear reaction rate is dominated by many resonances. Recently, the LUNA collaboration reported new data on a number of resonances between $E_{\rm p} = 71 - 400$ keV [1–3].

At the Rossendorf 3 MV Tandetron, five resonances at 436, 479, 639, 661 and 1279 keV were studied [4].

The present poster reports on the study of six additional resonances at $E_{\rm p}$ =851, 948, 1502, 1592, 1720 and 1834 keV. The targets were produced at the 200 keV high-current implanter at Legnaro National Laboratories (Italy). In the experiment, two high purity germanium detectors were used. For the analysis the by now well known 1279 keV resonance was used as reference.

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[1] Ferraro, F. et al., Phys. Rev. Lett. **121**, 172701 (2018).

[2] Cavanna, F. et al., Phys. Rev. Lett. **115**, 252501 (2015).

[3] Bemmerer, D. et al., EPL **122**, 52001 (2018).

[4] Depalo, R. et al., Phys. Rev. C **92**, 045807 (2015).