DETERMINATION OF LEVEL WIDTHS IN $^{15}$N USING NUCLEAR RESONANCE FLUORESCENCE

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The stable nucleus $^{15}$N is the mirror of the astrophysically important $^{15}$O, the product of the leading reaction in the hydrogen burning CNO cycle. Most of the $^{15}$N level widths below the nucleon emission thresholds are known from just one nuclear resonance fluorescence (NRF) measurement published more than 30 years ago, with limited precision in some cases [1]. A recent experiment with the AGATA demonstrator array aimed to determine level widths using the Doppler Shift Attenuation Method (DSAM) in $^{15}$O and $^{15}$N populated in the $^{14}$N + $^3$H reaction. In order to set a benchmark value for the upcoming AGATA demonstrator data, the widths of several $^{15}$N levels have been studied using the bremsstrahlung facility γELBE [2] at the electron accelerator of Helmholtz-Zentrum Dresden-Rossendorf (HZDR). The preliminary data seem to confirm the earlier NRF data. The precision of our new data are on a 10% level for the weak transitions, which have 60% and 100% error bars in the old dataset.

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