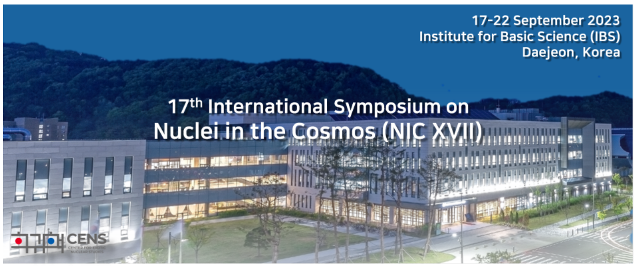

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Lifetime measurement of the dominant 22Na (p, gamma) 23Mg resonance in novae

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^{22}Na ($T_{1/2}$ = 2.6 y) is of high interest for space-based γ-ray astronomy because its direct observation could constrain classical nova models. Although the characteristic 1275 keV β-delayed γ decay radiation has not been observed yet, future γ-ray telescopes may detect the decay with high sensitivity. To link these observations with nova model predictions, nuclear data are needed. The ^{22}Na(p, γ) ^{23}Mg reaction destroys ^{22}Na produced during a nova. In the literature, there are discrepancies of one order of magnitude in the experimentally determined strength of the E_R=204 keV resonance important at nova temperatures. This affects predictions of the ejected yield substantially.
The resonance strength can be determined by measuring the proton branching ratio and the lifetime of the corresponding E_x=7.785 MeV excited state in ^{23}Mg.
With the Doppler-Shift Lifetime (DSL2) setup at TRIUMF-ISAC-II a new effort was started to measure the lifetime of this exited state. Excited states in ^{23}Mg are populated by the ^{24}Mg (^{3}He, α) ^{23}Mg reaction with a 75 MeV ^{24}Mg beam. Using the Doppler-Shift Attenuation Method (DSAM), deexcitation γ-rays are detected to perform line-shape analysis and infer the lifetime. This contribution will present the DSAM method and results from a preliminary measurement.

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