$^{27\text{-}29}$Mg masses and implications for the IMME

- The Isobaric Mass Multiplet Equation (IMME) is an important local mass model used to predict masses of relevance for nuclear astrophysics and exotic decays. Its quadratic form is however failing in a growing number of cases.

$$\mathrm{ME}(A,T,T_z) = a(A,T) + b(A,T)T_z + c(A,T)T_z^2$$

- We developed a novel method for extracting the cubic coefficient *d* of the IMME with respect to possible deviations in the A = 29, 30 multiplets.

- To improve accuracy, the mass excess of n-rich Mg was measured using the TITAN Penning trap, resulting in a smaller uncertainty for ^{29}Mg by a factor of 33.

- The largest-to-date *d* coefficient has been obtained and confirmed using state-of-the-art *ab-initio* calculations using the IM-SRG method.

A	d TITAN (keV)	d (SRG 1.8) (keV)
29	28(7)	24
30	10(5)	4

M. Brodeur *et al.*, Phys. Rev. C **96** 034316 (2017)