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## Are the Molybdenums Fluffy Too?

“*Why are the tin isotopes fluffy?*” has remained, for nearly a decade, a fundamental open problem in nuclear structure physics: models which reproduce the isoscalar giant monopole resonance (ISGMR) in the “standard” doubly-closed shell nuclei,  $^{90}\text{Zr}$ ,  $^{208}\text{Pb}$ , overestimate, by as much as 1 MeV, the ISGMR energies of the open-shell tin and cadmium nuclei [1-4].

To further elucidate this question as also to examine *when* this “fluffiness” appears in moving away from the doubly-closed nucleus  $^{90}\text{Zr}$ , and *how* this effect develops, we have carried out measurements of the isoscalar giant resonance strength distributions in a series of molybdenum nuclei. The measurements were performed for  $^{94,96,97,98,100}\text{Mo}$ , using inelastic scattering of 100 MeV/u  $\alpha$  particles at the Research Center for Nuclear Physics, Osaka University. The targets, with thicknesses  $\sim 5 \text{ mg/cm}^2$ , were enriched to an isotopic purity of approximately 95%. The measurements on all nuclei were performed within the same experiment so as to minimize any systematic effects in the final results. The versatile, high-precision mass spectrometer, Grand Raiden, provided small angle ( $0 - 10^\circ$ ) spectra virtually free of all instrumental background. The resulting double-differential cross sections can be used to reliably extract ISGMR strength distributions using a multipole decomposition analysis; this procedure is currently in progress. The extracted ISGMR strengths will be presented. It is hoped that these results, in combination with previously published results for the ISGMR strength in  $^{90,92}\text{Zr}$  and  $^{92}\text{Mo}$  [5], will provide important information for possible refinements of theoretical models in describing this mode in open- and closed-shell nuclei alike.

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