ARE THERE NUCLEAR STRUCTURE EFFECTS ON THE ISOSCALAR GIANT MONOPOLE RESONANCE NEAR A=90?

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The excitation energy of the isoscalar giant monopole resonance (ISGMR) exhibits, in general, a very smooth behavior ($E_x \sim A^{-1/3}$) over the periodic Table [1]. In recent work [2], the Texas A&M group has reported that ISGMR energies for ^{92}Zr and ^{92}Mo are appreciably higher than that for ^{90}Zr, suggesting significant nuclear structure effects on ISGMR and, hence, on the nuclear compressibility. To further examine these surprising and highly intriguing results, inelastic scattering of 385-MeV α particles has been measured on the aforementioned three nuclei using the "Grand Raiden" spectrometer [3] at RCNP, Japan. Background-free inelastic α-scattering spectra covering excitation energies of up to 35 MeV have been obtained at extremely forward angles, including 0°, where the ISGMR cross section is maximal.

Preliminary analysis of the 0° α-inelastic spectra indicates that the giant resonance "bumps" (comprised primarily of the ISGMR and the isoscalar giant quadrupole resonance) are nearly identical in the three nuclei, indicating absence of any significant structure effects. Results of detailed multipole decomposition analyses to extract the ISGMR strength distributions in the three nuclei will be presented.

REFERENCES

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