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The Effects of the Softness of "Off-Shell" Nuclei on Nuclear Incompressibility YILONG YANG, University of Notre Dame — The nuclear incompressibility is a key parameter governing the nuclear matter equation of state, which is important in the study of type-II supernova explosion and the radii of neutron stars. To experimentally constrain this quantity, we study the compressional mode giant resonances, namely, the isoscalar giant monopole resonance (ISGMR). It has been revealed in recent years that theoretical models which are calibrated to reproduce the ISGMR strength distribution in standard and doubly-closed nuclei underestimate the incompressibility for off-shell nuclei, resulting in the off-shell nuclei being termed "soft". This research focused on the study of the $_{94,96,97,98,100}$Mo isotopic chain for a systematic observation on how the "softness" manifests itself. The experiment was performed at the Research Center of Nuclear Physics, Osaka University and inelastic scattering of alpha particles was measured at extremely forward angles to provide maximal cross sections for exciting ISGMR. By measuring the ISGMR strength distributions in the aforementioned isotopes, we aim to observe the systematic effect on nuclear incompressibility and answer when does this "softness" appear in moving away from closed shells, and how it develops.

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