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Correlation between density-dependence of symmetry energy and electric dipole strength in unstable nuclei TSUNENORI INAKURA, Chiba University — Equation of state (EOS) is again shot into the limelight by discovery of the two-solar-mass neutron star. That heavy neutron star eliminates inadequate EOSs which can not support two-solar-mass neutron stars. Now there are several attempts to constrain the neutron matter EOS. In nuclear physics, it is expected to clarify density-dependence of the nuclear symmetry energy, L. We focus our attentions to dipole polarizability of unstable nuclei which has neutron skin. Since the neutron skin is approximately neutron matter, we believe that dynamics of unstable nuclei is affected by the neutron skin and we can extract the properties of neutron matter from it. Although some theoretical calculations using the random-phase approximation demonstrate a strong correlation between L and the dipole polarizability, almost all calculations are performed only for 3 nuclei, 68Ni, 132Sn, and 208Pb with a single interaction. There remains uncertainties on interaction and nuclide dependence. We performed a systematic calculation of the $E1$ modes with several interactions. We show that the correlation between L and the dipole polarizability has somewhat depends on interactions and nuclide and that 54Ca, 140Sn are more suitable for extracting constraint on L from the experiments.

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