

Abstract Submitted  
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**Isoscalar monopole and dipole responses in  $^{14}\text{O}$**  HIDETADA BABA, RIPS R311N COLLABORATION — Isoscalar monopole and dipole responses in unstable nucleus  $^{14}\text{O}$  with broad excitation energy range have been studied by inelastic  $\alpha$  scattering at 60 A MeV in inverse kinematics. The experiment was performed at the RIKEN Accelerator Research Facility. The  $^{14}\text{O}$  beam was produced by using the projectile fragmentation reaction and selected by the RIKEN Projectile Fragment Separator (RIPS). A radioactive  $^{14}\text{O}$  beam was incident on a liquid-helium target. The excitation energy spectra were obtained from invariant-mass of each decay channel of  $^{14}\text{O}^* \rightarrow ^{13}\text{N} + \text{p}$ ,  $^{12}\text{C} + \text{p} + \text{p}$ ,  $^{12}\text{C}^* + \text{p} + \text{p}$ ,  $^{10}\text{C} + \alpha$ , and  $^{10}\text{C}^* + \alpha$ . The isoscalar monopole and dipole strength distributions were deduced by the multipole decomposition analysis with the DWBA calculations. For measured decay channels, the integrated isoscalar monopole and dipole strengths up to  $Ex = 25$  MeV were identified corresponding to about half of the full energy-weighted sum rule. In addition to the fragmented strength distributions as seen in light stable nuclei, substantial continuum strength below 10 MeV for the isoscalar monopole and dipole responses were newly observed.

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