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In beam γ -ray spectroscopy via ${}^{32}\text{Mg}(\alpha, \alpha')$ reaction TOSHIAKI FUKUI, Kyoto University, RARF R373N COLLABORATION — It is well known that ${}^{32}\text{Mg}$ nucleus exhibits a disappearance of magic number at N=20. While the spin and parity of the first excited state are known, those of the higher excites states have not been determined. In order to investigate level structure of ${}^{32}\text{Mg}$, an alpha inelastic scattering on ${}^{32}\text{Mg}$ was performed at RIKEN. The alpha inelastic scattering is a good probe in determining the spin and parity of an excited state because of the selectivity in exciting natural parity states. A secondary beam of ${}^{32}\text{Mg}$ at $\sim 42\text{MeV}/\text{nucleon}$ bombarded a liquid He target. The ejectile was identified eventby-event with TOF-dE-E method. The scattering angle of ejectile was measured by sets of parallel plate avalanche counters. Gamma rays from the ejectile were detected by the 17 position sensitive Ge detector array (GRAPE). Gamma rays from the first and the higher excited states in ${}^{32}\text{Mg}$ were clearly observed. Angular distributions of differential cross section are compared with DWBA calculation. We will present the result of the analysis and discuss the collectivity of ${}^{32}\text{Mg}$.

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