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**Study of structure change in neutron-rich Mg isotopes by spin-polarized radioactive beam** HIROKI NISHIBATA, TADASHI SHIMODA, ATSUKO ODAHARA, Department of Physics, Osaka University, S1391 COLLABORATION — One of the important subjects in recent nuclear physics studies is the nuclear structure change as a variety of neutron number. In particular, island of inversion in the neutron-rich mass region around $^{32}$Mg has been attracting much attention. However, the experimental information, such as spins and parities, which are the key quantities to understand the nuclear structure, has not been known well. The detailed level structures of neutron-rich Mg isotopes have been studied by using highly-spin-polarized Na beam at ISAC in TRIUMF. We have obtained the revised and detailed level schemes of $^{28-30}$Mg. These results indicate structure change in neutron-rich Mg isotopes; normal configurations are dominant in $^{28}$Mg, candidates of two intruder levels with negative parity were identified in $^{29}$Mg, and the some levels of two different shapes and one candidate of $\gamma$ vibrational state were found in $^{30}$Mg. For the next step, we will perform an experiment for $^{31}$Mg. The existence of various nuclear structures is also expected in $^{31}$Mg which locates inside island of inversion. The systematic structure change in Mg isotopes together with the preliminary results of $^{31}$Mg will be discussed.

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