The Structure of Neutron-rich $^{28,29}$Mg Studied through $\beta$-decay of Spin-polarized $^{28,29}$Na Beams at TRIUMF K. TAJIRI, K. KURA, M. KAZATO, M. SUGA, A. TAKASHIMA, T. HORI, T. MASUE, T. SUZUKI, T. FUKUCHI, A. ODAHARA, T. SHIMODA, Osaka University, Y. HIRAYAMA, N. IMAI, H. MIYATAKE, KEK, M. PEARSON, C.D.P. LEVY, K.P. JACKSON, TRIUMF — The structure of neutron-rich Mg isotopes in the region of Island of Inversion has been attracting much attention because of vanishing of $N=20$ magic number and their large deformation in the ground states. However, most of the spins and parities of the excited states in Mg isotopes with $A\geq 29$ are left unknown. We have started systematic $\beta$-decay studies at TRIUMF, Canada, where highly spin-polarized radioactive Na beams are available. The experiment to determine the spins and parities of the states in $^{28,29}$Mg by using spin-polarized $^{28,29}$Na beams were performed at Osaka beam line in TRIUMF. The results are as follows: Many $\gamma$-transitions and energy levels were newly found in $^{28,29}$Mg. In $^{28}$Mg, spins and parities of the 4 levels reported previously were reconfirmed and those of the newly found 7.461 MeV level was assigned to be $2^+$. In $^{29}$Mg, spins and parities of 3 energy levels were assigned for the first time. Shell model calculations were performed with NuShell code by using USD, USDA and USDB interactions to compare with the experimental results. In $^{29}$Mg, we also compared with MCSM calculation. The level structure in $^{28}$Mg was well explained by only sd-shell configurations.

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