PHOTON SCATTERING MEASUREMENT ON ^{52}Cr WITH LINEARLY POLARIZED PHOTON BEAM AT NEWSUBARU

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Low-lying electric dipole (E1) and magnetic dipole (M1) excitations are fundamental modes of atomic nuclei. The observation of the E1 and M1 transitions provides information on the collective and single-particle modes of nuclear excitation such as pygmy E1 resonance (PDR) and spin-flip M1 resonance. Nuclei in the vicinity of the closed N=Z=28 shells such as chromium, iron, and nickel exhibit one of the most favourable regions for observing both the E1 and M1 excitations. However, it is difficult to distinguish E1 and M1 transitions in photon scattering measurements with unpolarised gamma-ray beam such as bremsstrahlung radiation. On the other hand, by using a linearly polarized photon beam it is possible to determine whether the transition is E1 or M1 type. In order to measure the E1 and M1 strength distribution in ^{52}Cr, we have carried out photon scattering measurements with a linearly polarized photon beam delivered at the NewSUBARU photon facility in University of Hyogo. More than 40 dipole transitions were observed and the parity quantum numbers were assigned for the states observed at the excitation energies between 7.5 and 12 MeV. While the summed magnetic dipole (M1) strength at this energy region was determined as $\Sigma B(M1)\uparrow = 6.2(3)\ \mu_N^2$, the summed electric dipole (E1) strength was determined as $\Sigma B(E1)\uparrow = 74(3) \times 10^{-3}\ e^2\ fm^2$. The results of the measurement and comparison with predictions based on random phase approximation will be presented.