MEASUREMENTS OF REACTION CROSS SECTION FOR $^{19\text{-}27}$F ISOTOPES

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During the past few decades, structures of exotic nuclei have been extensively studied through a number of experiments using radioactive beams. The reaction cross section (σ_R) or interaction cross section ($\sigma_I \fallingdotseq \sigma_R$ at around 1*A* GeV) is a physical quantity that naively reflects the nuclear size of atomic nuclei. The radii of stable nuclei are known to be proportional to $A^{1/3}$, and as a consequence, σ_R are also expected to increase as a function of mass number following the $A^{1/3}$ systematics. However, in 1980s, an anomalously large cross section of ^{11}Li beyond the $A^{1/3}$ systematics of other Li isotopes have been observed through the measurements of σ_I [1]. This large enhancement of cross section for ^{11}Li is now understood as the indication of the enormously large radius due to the two neutron halo formation in loosely bound nucleus ^{11}Li.

Recently, the mass number dependence of σ_R for Ne and Mg isotopes have been studied very precisely and the evolution of deformation in neutron-rich Ne and Mg isotopes have been successfully observed [2,3]. From the same study, the sudden increase of σ_R for nuclei in the vicinity of the drip line have been also observed, which indicates the formation of "deformed halo" structures in those nuclei [2,3,4,5].

In this work, in order to investigate the changes of nuclear structures in F isotopes from the stable region to the region far from the stability, σ_R of $^{17\text{-}27}$F isotopes have been measured on C target at around 240*A* MeV using BigRIPS at RIBF, RIKEN.

The results of the analysis will be reported and the mass number dependence of σ_R and the possible evolution of deformed structure in F isotopes will be discussed with the comparison to our previous work for Ne and Mg isotopes.

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