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Single-Neutron Transfer on ^{86}Kr and ^{93}Sr

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The structure of nuclei around and above the $N=50$ shell closure provides insight into the interplay between single-particle and collective excitations in neutron-rich nuclei. As one adds neutrons above the $N=50$ shell closure, nuclei are observed to undergo a rapid change from single-particle excitations into collective modes around neutron number 60. Single-neutron transfer information on nuclei in this region helps to understand the evolution of the neutron orbitals above the shell gap.

Experiments were performed at the TRIUMF-ISAC radioactive beam facility studying single-neutron transfer on ^{86}Kr and ^{93}Sr . In the resulting ^{87}Kr , single-particle structure analysis of this data shows the evolution of neutron orbitals directly above the $N=50$ neutron shell closure. Angular distributions were measured to 7 states in ^{87}Kr , and spectroscopic factors are compared with shell model calculations and previous experimental measurements of the $^{86}\text{Kr}(d,p)^{87}\text{Kr}$ reaction.

The structure of ^{94}Sr was observed via (d,p) reactions on ^{93}Sr . This experiment is the first ever population of ^{94}Sr via a $^{93}\text{Sr}(d,p)$ reaction. Angular distributions and associated spectroscopic factors for the transfers to 5 states were measured for the first time. Two excited states are updated to being spin $J^\pi = 3^+$ states in contrast with previous spin assignments.

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