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Isospin Mixing in the $A=46$, $T=1$ Isobaric Multiplet

The question of the degree of purity of the isospin quantum number is one of considerable importance and much current interest. Although the value of isospin is not a directly observable quantity, both the purity of isospin and the extent of the resulting symmetries can be examined by investigating the T_z -dependence of specific nuclear phenomena among a set of isobaric analogue states. In particular, in absence of isospin mixing, the quadrupole transition matrix elements are linear with T_z ; any deviation from this linear trend can therefore give informations on the degree of isospin purity of the states under examination. In a experiment performed at GSI with the AGATA-FRS-LYCCA setup a combination of Coulex and plunger lifetime experiments was performed across the $A=46$ isobaric triplet, ^{46}Cr - ^{46}V - ^{46}Ti in order to investigate the isospin mixing between the $T=0$ and $T=1$, $J^\pi=2^+$ states in ^{46}V . The aim of this experiment was to study the $B(E2)$ strengths for the $J^\pi:2^+ \rightarrow 0^+$ analogue transitions across this triplet in order to test the linearity of the $\sqrt{B(E2)}$ against the third component of isospin, T_z , thus providing a test of isospin mixing. The status of the analysis and the results for both Coulex and lifetime experiments will be presented.

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