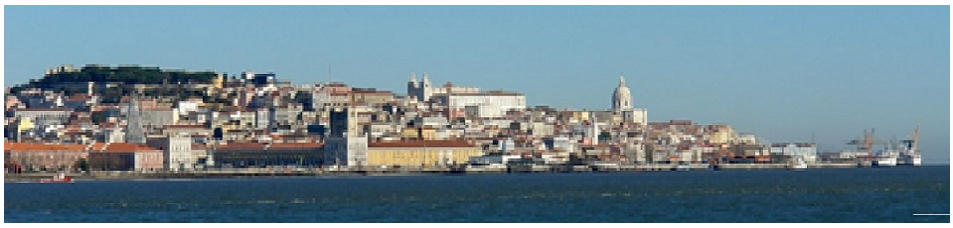

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# Probing isospin non-conserving forces in nuclei through studies of isospin triplets

Isospin symmetry is fundamental in nuclear physics. In the case that the proton and neutron were identical particles with the same charge, then excited states in mirror nuclei would have identical excitation energies. In reality, the pp-, nn- and np-interactions are not identical which leads to small differences in excitation energy of states of order of 10s of keV. These small differences provide important insights into the details of the nuclear force. For T=1 isospin triplets, it is possible to construct mirror energy differences (MED) - the difference between excitation energies in the Tz = -1 and +1 nuclei, and triplet energy differences (TED) which incorporate the differences between excitation energies in all three systems. For TED, which are isotensor energy differences, the single-particle contributions cancel. Since contributions involving Coulomb effects are readily calculable, TED are particularly sensitive to additional terms such as isospin non-conserving (INC) components.

The study of TED has been pushed to higher masses through the first study of the excited states of the Tz = -1 nuclei, 66Se, 70Kr and 74Sr. The states were identified using the technique of recoil-beta-tagging (RBT). The TED obtained for A=66, 70 and 74 have been compared with shell model calculations using the JUN45 interaction. In order to reproduce the observed TED, it is necessary to incorporate an INC component as in the f7/2 shell. This points to the universal nature of the INC contribution and suggests it may have a similar magnitude irrespective of the orbitals involved.

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