A MODEL STUDY OF T=0 AND T=1 PAIRING IN A SINGLE J-SHELL*

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Recent advances in experimental techniques and new possibilities that are becoming available with the use of radioactive beams, are driving a renaissance of nuclear structure studies along the N=Z line. A subject of particular interest in these nuclei is the study of isoscalar (T=0) and isovector (T=1) pairing correlations. For more than 40 years since the initial suggestion by Bohr, Mottelson and Pines [1] of a pairing mechanism in the nucleus, analogous to that observed in superconductors, a wealth of experimental data has been accumulated supporting the important role of *nn* and *pp* "Cooper pairs". In contrast to this well established phenomenon, we are still searching for a clear signature of the formation of correlated *np* pairs.

In this work we present a study of competing isovector and isocalar pairing correlations within the framework of a spherical single j-shell space. We used the code OXBASH [2] introducing an effective two-body force of the form $V = xV_{J=0}^{T=1} + (1-x)V_{J=1}^{T=0}$, to model the mixture of the two types of interactions by the value of x. We will compare our results with those of a single *l*-shell [3], stressing the most relevant differences between the two cases. In particular, we find that an appreciable component of isoscalar pairing (~50%) favors a ground state with aligned spin.

We will also discuss the behavior of binding energy differences and relative excitation energies of the lowest T=0 and T=1 states in odd-odd N=Z nuclei in the presence of a *deuteron-like* (*np*, T=0) pair condensate. A connection with experimental data will be made.

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