

# Neutron deficient exotic nuclei and the Physics of the "proton rich side" of the nuclear chart



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## Aligned neutron-proton pairs in $N=Z$ nuclei

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It is shown that the aligned neutron-proton pair with angular momentum  $J=9$  and isospin  $T=0$  plays a central role in the low-energy spectroscopy of the  $N=Z$  nuclei approaching  $100\text{Sn}$ . This observation is made in the context of the spherical shell model on the basis of several realistic two-nucleon interactions. Shell-model results are analyzed in terms of a variety of two-nucleon pairs corresponding to different choices of their coupled angular momentum  $J$  and isospin  $T$ . The analysis is performed exactly for four holes ( $96\text{Cd}$ ) and carried further for six and eight holes ( $94\text{Ag}$  and  $92\text{Pd}$ ) by means of a mapping to an appropriate version of the interacting boson model.

On the basis of these results one concludes that a realistic model can be formulated in terms of  $s$  (with  $J=0$ ) and  $b$  (i.e., aligned  $J=9$ ) bosons. Due to its simplicity, such a model could be of use to elucidate the main structural features of  $N=Z$  nuclei in this mass region. Examples of simple predictions of such a model will be given.

### Summary

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