

HAW05-2005-000593

Abstract for an Invited Paper  
for the HAW05 Meeting of  
the American Physical Society

**Nuclear structure, nuclear force and spin-isospin excitations in stellar processes**

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The spin-isospin Nucleon-Nucleon ( $NN$ ) force plays crucial roles in determining shell structure of exotic nuclei. Even magic numbers can be destroyed. We will overview what changes can be expected in exotic nuclei on single-particle properties and spin-isospin excitations, including Gamov-Teller processes. The Gamov-Teller and other weak processes can be well studied by recent shell model calculations with newly determined effective  $NN$  interactions. We shall survey such new results, and look at possible implications on stellar processes. The calculations include full pf-shell calculations and pf+g<sub>9/2</sub> calculations. We may discuss the stability of  $^{78}\text{Ni}$  core in exotic Ni isotopes and its implications in the r-process. Within the pf-shell, the Gamov-Teller properties will be assessed in view of their influences on stellar processes. Such studies will provide us with some information on neutrino reactions.