Effective Boson Number- A New Approach for Predicting Separation Energies with the IBM1, Applied to Zr, Kr, Sr isotopes near A=100[1]

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— This work uses effective boson numbers in the Interacting Boson Model (IBM1) to predict two neutron separation energies for neutron-rich zirconium, strontium, and krypton isotopes., We determine the functional forms of binding energy and excitation energies as a function of boson number for a given choice of IBM parameters that give a good overall description of the experimental spectra of the isotopic chain. The energy of the first excited 2+ level is then used to extract an effective boson number for a given nucleus, that is in turn used to calculate the separation energies. This method accounts for complex interactions among valence nucleons around magic and semi- magic nuclei and successfully predicts the phase transitional signature in separation energies around A=100 for 92-108Zr, 90-104Sr, and 86-96Kr [1] References: [1] Ame2011-preview as downloaded from http://amdc.in2p3.fr/masstables/Ame2011int/filel.html.

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