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Speaker: Dr. Yamac Pehlivan, Halic University

Title: A Supersymmetric Model of Nuclear Isotopes.

Abstract: Pairing between quantum particles is responsible for a broad range of interesting behavior in many body systems such as the superconductivity in metals and the collective behavior of nucleons in atomic nucleus. Although the pairing interaction between the valance electrons of metals in the former case was known to be exactly solvable for a long time, the exact solutions of the pairing interaction between nucleons is only recently being understood.

In this talk, the limit of strong pairing between nucleons will be considered. It will be shown that, in this limit, various nuclear isotopes can be considered as supersymmetric partners of each other and exact energy levels and eigenstates can be found using the method of algebraic Bethe ansatz. A comparison between calculated and experimental values will also be presented for some nuclei.