

Abstract Submitted  
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**Nuclear Delta Force for Two Valence Nucleons in Quadrupole Deformed Nuclei** ANISH VERMA, Simon Fraser University — The nuclear delta force interaction is studied and modelled for the case of two valence nucleons in the spherical shell model, to be extended to the case of the deformed particle rotor model coupled to a pair of valence nucleons, and compared to data. The spherical shell model treats nucleons as individual particles moving independently within the central Woods-Saxon potential. The Hamiltonian for two nucleons in the same valence shell outside of an inert shell core is then modelled taking into account the nuclear delta force to describe their interaction. This model is then compared to the excited state data for nuclei with two nucleons, of the same type, more than being doubly magic. This nuclear delta force is to be extended to the case of two valence nucleons coupled to a quadrupole deformed rotor, by imposing the  $D_2$  symmetry associated with this deformation. This deformation can manifest in an axially or a triaxially deformed rotor, and as such, both cases are considered when coupling the two valence nucleons. The future outlook for this goes to adding a nucleon of particle character in order to probe observed degeneracies.

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