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物理

核形状量子相变与微观sdIBM-(F)$\bar{}_{max}$的势能曲面

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摘要 通过用两种激发模式对原子核复杂能谱的良好再现，揭示出对激发模式相变的一种新理解：由于退激发解除了原有激发模式基准态结构及其在能量上的优势，高有序基准态释放结构能，同时引发低能激发模式基准态结构的重构，实现了新旧激发模式基准态的过渡。这种以改变价核子间耦合强度方式实现的基准态过渡，是转动驱动量子相变的动力学基础，从微观上看比较温和。本工作结果得到Bohr集体模型势能曲面理论的支持，两者相得益彰。

关键词 量子相变 势能曲面 微观sdIBM-(F)$\bar{}_{max}$方案 ^{156}Gd核

分类号

Quantum Phase Transition of Nuclear Shape and Potential Energy Surface in Microscopic sdIBM-(F)$\bar{}_{max}$ Approach

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Abstract Using the two kinds of excitation spectra of approach for the satisfactorily reproducing nuclear complex spectrum, this treatment revealed a new understanding of phase transitions as the basis state structure of original excitation mode and its advantages in energy were relieved by de-excitation, the basis state of high-ordered structure release energy, at the same time the basis state structure of the low-energy excitation mode was restructured, the transition between new basis state and old one was achieved. This kind of change is one that is completed by the adjustment of the nuclear coupling strength, and a dynamic microscopic fundament of the rotational driven quantum phase transition, which is a suave microscopically. This new understanding is obtained from theory of potential energy surfaces of the Bohr collective model. Thus, the results of micro-sdIBM-(F)$\bar{}_{max}$ are supported by the Bohr collective model.

Key words quantum phase transition potential energy surface microscopic sdIBM-(F)$\bar{}_{max}$ approach ^{156}Gd nucleus

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