



## The structure of octupole phonons in nuclei

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Nuclei with a closed-shell configuration for neutrons and protons exhibit low-energy excitations with angular momentum  $J=3$  and negative parity. Such excitations are associated with nuclear shapes that break reflection symmetry and, in particular, with pear-like or octupole shapes. In this talk the shell-model structure of octupole excitations is discussed and the question of their phonon-like behaviour is addressed. It is shown that with some simple assumptions concerning single-particle energies and nucleonic interactions octupole excitations obey universal symmetry properties. The results of this schematic approach are compared with those of a realistic shell-model calculation for  $^{208}\text{Pb}$ . Extensions to odd-mass and semi-magic nuclei are also discussed.