

SEMINÁŘ OTF ÚJF, ŘEŽ

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**Microscopic multiphonon approach
to spectroscopic properties
of even and odd nuclei**

Abstract

An equation of motion phonon method (EMPM) will be briefly outlined. It generates a multiphonon basis through the construction and solution of a set of equations of motion and, then, adopts such a basis to diagonalize a realistic Hamiltonian. The method goes beyond the currently adopted random phase approximation and its extension, does not rely on any approximation and takes into fully account the Pauli principle.

We have applied the EMPM to the neutron rich even-even nuclei ^{200}O , ^{132}Sn , and ^{208}Pb . Self-consistent calculations using a chiral potential have been performed in spaces including up to a large number of two-phonon states to study the fragmentation of the giant dipole resonance and the fine structure of the pygmy dipole resonance. The method has been also applied, in its extension to odd nuclei, to ^{170}O and ^{17}F . A basis of particle-core states including up to three phonons was generated using a Hartree-Fock basis derived from a chiral potential. The generation of the full spectra complemented with the calculation of moments, transition strengths and cross sections provides a complete description of the properties of the two $A=17$ isobars. The analysis of the phonon composition of the eigenfunctions has also enabled us to get a deep understanding of the nature of the states.

**Seminář se koná ve čtvrtek 22. 6. 2017 v 10:30 hod.
v seminární místnosti OTF ÚJF v Řeži**

A. Ciepły/otf