Contribution ID: **103**   Type: **Oral**

Finite Element Solver for Collective Nuclear Models

Computational scheme and solver of the finite element method for solving elliptic multidimensional boundary value problems with variable coefficients given as in analytical, as in tabular form describing collective models of atomic nuclei implemented in Mathematica and C++ are presented.

Benchmark calculations of the spectrum, quadrupole momentum and electric B(2E) transitions of generalized Bohr-Mottelson boundary value problems for the exact solvable and collective model of atomic nuclei including mixed derivative of two dimensional vibrational part of five dimensional Hamiltonian in representation of angular momentum in intrinsic frame are analyzed.

B. Batgerel, S.I. Vinitsky, O. Chuluunbaatar, J. Buša Jr., Yu.A. Blinkov, A.A. Gusev, A. Deveikis, G. Chuluunbaatar, V. Ulziibayar, Schemes of finite element method for solving multidimensional boundary value problems, Journal of Mathematical Sciences 279, pp. 738–755 (2024).

Section

Nuclear structure: theory and experiment

Primary author: ГУСЕВ, Александр (Laboratory of Information Technologies Joint Institute for Nuclear Research)

Presenter: ГУСЕВ, Александр (Laboratory of Information Technologies Joint Institute for Nuclear Research)

Session Classification: Nuclear structure: theory and experiment