Achievments :i) Microscopic description of double quadrupole-octupole phonon states(Nucl. Phys. A 149(1970) 11, Nucl.Phys.A.181 (1972) 153, Phys.Rev. C8 (1973) 1525, Progr. Th. Phys.3, 52 (1974), Ann of Phys. 100 (1976) 94);

ii) Analytical expressions for the eigenstates of the harmonic Bohr-Mottelson Hamiltonian (Nucl. Phys. A 296 (1978) 228, Nucl. Phys. A 311 (1978) 118);

iii)The Coherent State Model (Nucl. Phys. A 381 (1982) 253, Phys. Rev. C36 (1987) 2111), which in the latest improved version is able to describe 8 rotational bands (4 of positive and 4 of negative parity) in even-even(Phys. Rev. C74 (2006) 044312) and 6 in even-odd nuclei (3 of positive and 3 of negative parity) (Phys. Rev. C 80, 044327 (2009)), up to high and very high spin.

iv) Boson expansion description of the double beta decay (Nucl.Phys.A 534 (1991) 149);

v) A projected spherical single particle basis which is able to describe unitarily the spherical and deformed nuclei (Nucl.Phys. A551 (1993) 73).

vi) A microscopic description of the deformed atomic clusters (Phys. Rev. B 59 (1999) 8209, Eur. Phys. Jour. D 15 (2001) 65, Phys. Rev. A.79, 023202 (2009));

vii) Semi-microscopic model for single and double backbending phenomena (Phys. Rev. C 84 (2011) 044323,Jour. Phys. G: Nucl. Part. Phys, 40 (2013)025109);

viii) Microscopic description of single and double analog states (Phys. Rev. C, 68 (2003) 044317);

ix) A new boson representation fot the SU(2) algebra; the classical origin of the BCS and RPA approximations (Nucl. Phys. A 427 (1984) 1);

X) Analytical expressions for the degeneracies of the SU(2n+1) groups,Jour. Phys. A: Math. Gen. 37 (2004) 10951);

XI) Fully renormalized pnQRPA and the gauge symmetry restoration (Nucl. Phys. A 634 (1998) 497, Nucl. Phys. A 756 (2005) 153-175,Phys. Rev. C 84, 064322 (2011)) ;

XII) Classical vs. quantal features described by the quadrupole coherent states(Phys. Rev. C 86 (2012) 054307);

XIII) Description of the phase transitions in finite nuclei with spheroidal and Mathieu functions (Nucl. Phys. A. 819 (2009) 46-78, Phys. Lett. B 648 (2007) 171-175, Phys. Rev. C, 83 (2011) 034313);

XIV) Deformation of the Dirac brackets and the quantization of systems with second class constraints (Phys. Rev. D 73, 029905 (2006), International Journal of Modern Physics A, vol. 22, nr. 4 (2007) 787-833, Phys. Lett B. 608 (2005) 164).

 XV) Chiral symmetries in even-even nuclei (Jour. Phys. G:Nucl. Part. Phys. 41 (2014) 035105)