

Jørgen Randrup: Brief Research Summary

Nuclear structure and β decay: β decay from deformed nuclei, β strength functions, Gamow-Teller resonances, shell structure. [1-3,89]

Structure and stability of heavy and superheavy nuclei: Spontaneous-fission halfives, shell corrections, deformation-energy surfaces, superheavy elements. [4-8]

Nuclear static and dynamical properties: Thomas-Fermi approximation, self-consistent densities, surface energy, proximity potential, proximity friction, window formula, one-body dissipation, surface response. [9-10,12-14,16-17,20,25,27,50,60,71,73]

Damped nuclear reactions: Nucleon exchange transport model, dynamics of the dinucleus, transport of charge, mass, angular momentum, and heat. [18,24-25,28-30,36-37,39-40,42,45-46,52-57,59,61-62,64,66,79-80,90]

Pre-equilibrium processes: Fermi jets, hard neutrons, protons, and photons. [26,72,75,112]

Relativistic nuclear collisions: BUU treatment of equilibration in a resonance gas, linear cascade model, spectra and correlations, strange-particle production. [19,21-23,31,33-35,38,48,51,99,104]

Nuclear disassembly: Statistical multifragmentation, global event analysis, transition-state theory of multifragmentation, energy-density treatment of multifragment system, equation of state and spinodal properties, event generators FREESCO, WIX, SOS. [32,41,43-44,47,49,58,63,65,67,70,74,76-77,83,85-87,93,98,102,106-108,113,116-117]

Many-body simulations: Quasi-classical molecular dynamics, Pauli potential, phase mapping, disassembly dynamics, cluster recognition. [68-69,78,82,92,110]

Boltzmann-Langevin transport theory: Phase-space transport, fluctuations and correlations, equilibration dynamics, onset of spinodal growth, response function, approximate simulation methods. [84,95-97,100-101,103,105,107,109,111,114,118-125,135]

Spin-isospin modes: Medium effects in hot and dense matter, dispersion relations, dilepton enhancement, transport simulations. [127-129,137,139,143-144]

Quantum fluctuations: Wave-packet simulations, anti-symmetrized molecular dynamics, quantum-statistical equilibrium, quantum-Langevin theory, critical properties of noble gases, nuclear multifragmentation, production of hypernuclei. [115,124,126,132,134,136,141]

Disoriented chiral condensates: Linear σ model, mean-field approximation, statistical properties in finite systems, order parameter dynamics, pion spectra and correlation functions, wavelet analysis, dilepton production, dynamical test-particle simulations, classical versus quantal field theory, inclusion of strangeness. [130-131,133,138,140,142,145]

Computational physics: Random-number tests, generation of complete multifragment events, statistical event generators, constrained sampling in many-particle systems. [15,43,63,91,94,102,116]