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Coupled SU(3) models of rotational states in nuclei and quasi-dynamical symmetry GABRIELA THIAMOVA, Department of Applied Mathematics, University of Waterloo, Waterloo, Canada, DAVID J. ROWE, Department of Physics, University of Toronto, Toronto, Canada, THIAMOVA+ROWE TEAM — This contribution reports a first step towards the development of a model of low-lying nuclear collective states based on the progression from weak to strong coupling of a combination of systems in multiple SU(3) irreps. The motivation for such a model comes partly from the remarkable persistence of rotational structure observed experimentally and in many model calculations. This work considers the spectra obtainable by coupling just two SU(3) irreps via a quadrupole-quadrupole interaction. For a particular value of this interaction, the two irreps combine to form strongly-coupled irreps while for zero interaction the weakly-coupled results are mixtures of many such strongly-coupled irreps. A notable result is the persistence of the rotor character of the low-energy states for a wide range of the interaction strength. Also notable is the fact that, for very weak interaction strengths, the energy levels of the yrast band resemble those of a vibrational sequence while the B(E2) transition strengths remain close to those of an axially symmetric rotor, as observed in many nuclei. An application to shape coexistence in ^{16}O is considered to show that the model gives a qualitative indication of which *np-nh* states are likely to contribute to the low-energy states of nuclei.

Gabriela Thiamova
Department of Applied Mathematics,
University of Waterloo, Waterloo, Canada

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