Abstract Submitted
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Pygmy-Resonance as a Manifestation of Strong Coupling to Continuum[1] ALEXANDER VOLYA, Florida State University, VLADIMIR ZELEVINSKY, NSCL and Michigan State University — The collective strength of giant resonances is built on coherent interaction of many simple particle-hole type excitations with specific quantum numbers. For isovector modes, and for the giant dipole resonance in particular, the collective strength forms a main peak shifted up in energy. The remaining unshifted low-energy strength becomes more pronounced in neutron-rich nuclei giving rise to the pygmy-branch of the giant resonance. Microscopically it can be presented as a vibration of the neutron skin against the core. Standard RPA calculations do not reveal an important role played by the continuum coupling. The particle-hole excitations, especially in loosely bound nuclei, are quasistationary states in the continuum. In such cases, the interaction through decay channels competes with a conventional shell model interaction and, for sufficiently large decay widths and overlapping resonances, leads to the collectivization of the widths (the phenomenon of"super-radiation"). The interplay of two collectivities was originally considered in [1], where the enhancement of the pygmy-branch was predicted on the base of schematic models. We present the first results of microscopic calculations in the framework of the recently advanced version of the continuum shell model [2].

1. V.V. Sokolov and V.G. Zelevinsky, Fizika (Zagreb) **22**, 303 (1990).
2. A. Volya and V. Zelevinsky, Phys. Rev. Lett. **94** (2005) 052501.

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