Recent developments and applications of the Projected Generator Coordinate Method (a personal account)*

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The Projected Generator Coordinate Method (PGCM) is a powerful and versatile theoretical framework that has been used for decades to study low-energy nuclear structure [1,2]. Notably, the PGCM is particularly well suited to describe collective nuclear phenomena such as deformation and pairing. At the same time, the restoration of symmetries through quantum-number projection assures that the nuclear wave functions considered respect the symmetries of the nuclear Hamiltonian [3], which permits an unambiguous evaluation of the observables of interest. In this presentation, I will discuss some recent developments and applications of the PGCM in nuclear physics. In particular, I will focus on the applications of the PGCM to the spectroscopy of odd-mass nuclei from light- to heavy-mass systems [4,5], the calculation of reliable nuclear matrix elements for the neutrinoless double-beta decay [6,7] and the modeling of the initial stage of ultra-relativistic heavy-ion collisions [8,9].

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