# GCM+GOA ELECTROMAGNETIC MULTIPOLE TRANSITION OPERATORS AND SYMMETRIES OF GENERATING FUNCTIONS

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One of the most popular method of constructing nuclear collective models is the prescription given by Bohr and his collaborators many years ago. This method leads to constructions of nuclear collective spaces corresponding to the appropriate classical models.

However, in this case a construction of quantum observables is not unique, even the choice of space of quantum states is arbitrary. The electromagnetic multipole transition operators are good example for these difficulties. The electric multipole operators seem to be simpler for construction because they are, in the first approximation, dependent only on nuclear charge density distribution. The magnetic multipole operators are more difficult for derivation because they depend on less known nuclear electric current density.

In fact, there is not many papers devoted to this problem. Usually the electromagnetic transition operators are obtained on a phenomenological basis. Their forms are rather a kind of guess usually based on expected transformation properties of these operators with a number of phenomenological coefficients which allow to fit the theoretical transition probabilities to the experimental data.

In this seminar we show a preliminary derivation of electromagnetic multipole transition operators for collective models making use of the Generator Coordinate Method with the Generalized Gaussian Overlap Approximation. The results are discussed in the context of structure of the GCM collective space and symmetries of generating functions.