

Monopole vibrations studied with molecular dynamics

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The monopole vibrations are collective motions of the nuclei which are characterized by their compression and their dilatation. The monopole vibrations are strongly related to the equation of state of the nuclear matter, and they are usually studied with mean field models at small amplitudes such as the RPA/TDHF models.

We have recently developed molecular dynamics models (AMD/FMD) based on Skyrme functionals, and we are interested in testing the capability of such kind of models to investigate the monopole vibrations for a wide range of amplitudes. In that framework we will discuss their applications for the case of Carbon 12 and Calcium 40, and also the interesting behavior that we have found for these two nuclei.