
NUCLEAR CLUSTERING AND EXCITATIONS IN THE EDF APPROACH

E. Khan, Institut de Physique Nucleaire, Orsay, France

Recently an intense activity based on Energy Density Functionnal (EDF) approaches aims to describe clustering effects in nuclei. Such studies allow to proceed towards an unified description of both quantum liquid and clusters nuclear states. The impact of using a relativistic or non-relativistic EDF method is also discussed.

In the light of these models, the so-called Ikeda diagram as well as the occurrence for clustering in the ground or excited states will be analysed. Preliminary results of qualitative and quantitative predictions of excited states will be provided, considering cluster vibrations, IBM approach of the excitation spectrum, configuration mixing and quarteting.

REFERENCES

- J.P. Ebran, E. Khan, T. Niksic and D. Vretenar, *Nature* 487, 341 (2012).
- J.P. Ebran, E. Khan, T. Niksic and D. Vretenar, *Phys. Rev. C* 87, 044307 (2013).
- J.P. Ebran, E. Khan, T. Niksic and D. Vretenar, *Phys. Rev. C* 89, 031303(R) (2014).
- J.P. Ebran, E. Khan, T. Niksic and D. Vretenar, *Phys. Rev. C* 90, 054329 (2014).