

SÉMINAIRE du PÔLE THÉORIE



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Quartet condensation in $N = Z$ nuclei

A specific feature of $N = Z$ nuclei is the occurrence of α -like quartet structures, composed by two neutrons and two protons, which have strong internal correlations and interact weakly with each other. Various studies have shown that the ground states of $N=Z$ nuclei can be described by a condensate of α -like quartets [2-8]. This quartet condensate is the analogous of the Cooper pair condensate, commonly employed to treat the neutron or proton pairing correlations. As shown recently, the quartet condensation is also related to the band-like structures of even-even $N=Z$ nuclei [9-11]. More precisely, the low-lying excitations of these nuclei are associated to the breaking of a quartet from the ground state quartet condensate and replacing it with an excited quartet.

In the first part of the seminar we shall present an overview of the issues mentioned above. Then we shall discuss how the fingerprints of the quartet condensation might show up in the α transfer reactions along a chain of even-even $N=Z$ nuclei.

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Thursday 14 September 2023,

14h00

IJCLab, Bât. 100, room A015