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Spectroscopy of 78Ni with DALI2 and MINOS

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Expected to be doubly magic, 78Ni is a key nucleus to further understand the nuclear shell structure.
Its spectroscopy will allow to probe the Z=28 and N=50 shell closures for neutron-rich nuclei. Several experiments on neighbouring nuclei have been performed to this end.
The study of N=50 isotones reveals that copper (Z=29), zinc (Z=30), germanium (Z=32) and selenium (Z=34) isotopic chains all exhibit a persistence of the N=50 shell closure. On the other hand, the comparison of experimental data to shell model calculations with a 48Ca core suggests a reduction of the Z=28 shell gap, interpreted as possibly due to the tensor term of the in-medium nucleon-nucleon interaction.
Being a very neutron-rich nucleus, 78Ni is a challenge to be produced at sufficient intensity for its spectroscopy in reasonable time, thus rendering the use of the MINOS device with the high efficiency gamma ray DALI2 a clear advantage. In this talk, the feasibility of the spectroscopy of 78Ni with the MINOS-DALI2 setup will be addressed.

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