MINOS: A NEW DEVICE FOR THE SPECTROSCOPY OF EXOTIC NUCLEI

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MINOS (acronym for MagIc Numbers Off Stability) is a device dedicated to perform in-flight spectroscopy of very exotic nuclei in knockout reactions. It consists of a thick liquid hydrogen target (15-20 cm) surrounded by a TPC acting as a tracking detector. The vertex position is reconstructed from the direction of the emitted protons and the beam. In this way one can profit from the increase of luminosity (up to one order of magnitude) due to the thick target without losing resolution in the Doppler correction, as would occur if the vertex position in the target was not measured [1].

The MINOS device is financed by the European Research Council and has been designed and built between 2011 and 2013 at CEA/IRFU. Physics experiments at the RIKEN RIBF facility have started in 2014. Three experiments have been approved including highlights as the measurement of the invariant mass of ^{28}O and the spectroscopy of ^{78}Ni. This last one is part of the SEASTAR scientific program, which has the goal of measuring for the first time the low-lying spectroscopy of several very neutron-rich nuclei between Ar and Zr.

The features of the device will be described and the physics program at RIBF will be presented, together with an overview of results from the experiments performed in 2014.

REFERENCES

[1] A.Obertelli *et al.*, Eur. Phys. J. A (2014) 50: 8