

PolarEx, a facility for on-line nuclear orientation at ALTO-LEB: nuclear magnetic properties measurements

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Low Temperature Nuclear Orientation (LTNO) experiments allow us to probe magnetic properties of polarized exotic nuclei. With this technique, we observe nuclei under extreme conditions, namely very low temperatures (~ 10 mK) and very high magnetic field (10-100 T). Under such conditions, radioactive emission becomes anisotropic, and its shape provides valuable information about the nucleus structure.

Nuclear orientation gives access to different observables. The nuclear magnetic moment can be directly measured, using NMR technique. The multipole mixing ratio, which is proportional to the ratio of two multipolarity matrix elements, can also be studied and provides access to structure information.

The PolarEx apparatus, composed of a ^3He - ^4He dilution refrigerator, is located at ALTO in Orsay, France, and is designed for such studies. Its detection system supports up to 8 detectors, either gamma or particle detector, to study the spatial asymmetry of the gamma radiation.

At present, PolarEx operates off-line on long-lived nuclei, but it will soon be ready for on-line experiment. The coupling of PolarEx with ALTO will open a large range of studies of neutron-rich nuclei, thanks to its great versatility.

In this contribution will be presented the status of PolarEx and the results of multipole mixing ratio measurements. These results have reproduced known mixing ratios, improved the precision of some, and determined unknown mixing ratios.

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