Recent developments in g-factor measurements on exotic nuclei and their relation to nuclear structure*

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Radioactive beams offer both new opportunities and new challenges for experimental studies of nuclear magnetic moments (or g-factors) which may provide an incisive probe of the new shell structures being found in exotic nuclei. As production methods for radioactive beams are diverse, so too are the techniques for g-factor measurements on excited states of exotic nuclei produced as radioactive beams. The two approaches we have focused upon are the High Velocity Transient Field (HVTF) technique [1, 2], which is applicable to exotic nuclei produced as fast fragments at facilities such as the National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University, and the Recoil in Vacuum (RIV) technique [3, 4], which is applicable to nuclei produced at lower velocities by the ISOL technique, at facilities such as the Holifield Radioactive Ion Beam Facility (HRIBF) at Oak Ridge National Laboratory. In both cases the radioactive beam experiments have rested on extensive studies with stable beams, undertaken largely at the Australian National University Heavy Ion Facility.
In this talk progress in excited state g-factor measurements with radioactive beams will be reviewed, with an emphasis on the structure of nuclei near shell closures. For example, at the time of writing HVTF measurements are underway at NSCL on neutron-rich Ar between N=20 and N=28. Where relevant, stable beam studies, which underpin and point the way for future radioactive beam studies, will be discussed.

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