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Measurements of magnetic moments of excited states in nuclei far from from stability.

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Magnetic moments of nuclear states provide information on their microscopic structure as a function of energy, spin and temperature and reveal subtle interplay between single particle and collective nuclear excitations. Advances in technology have made it possible to measure magnetic moments of states with lifetimes ranging from hours to tens of femtoseconds. In addition, the current availability of radioactive beams and the future promise of intense beams of nuclei very far from stability have opened new regions of the nuclear chart to the investigations of the nucleon-nucleon interactions in exotic nuclei. The main element of these experiments is provided by the hyperfine interaction between fast moving spin-aligned nuclei and polarized electrons in ferromagnetic materials. The new techniques that have been been recently developed for application in radioactive environments will be discussed. The results of experiments carried out, at low and intermediate energies, on radioactive beams of 132Te, 76Kr and 38,40S, produced at ISOL or fragmentation facilities, will be presented and the future prospects of the field will be outlined. This work was supported in part by the US National Science Foundation.