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Excited-state g-factor measurements: challenges and opportunities

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Excited-state g factors can be measured by a variety of techniques, depending on the lifetime of the state of interest. Examples include time-dependent perturbed angular correlations/distributions (TDPAC, TDPAD), integral perturbed angular correlations/distributions (IPAD, IPAC), implantation perturbed angular correlation/distribution methods (IMPAC, IMPAD), and recoil in vacuum methods (both time-dependent and integral).

Generally, the time-dependent methods require longer lifetimes (more than about 10 ns). Measurements on shorter-lived states in the picosecond regime usually require the use of hyperfine fields and integral precession methods, which present special experimental challenges.

This presentation will give an overview of methods considering both their challenges and the opportunities they give for nuclear structure research. There will be a focus on potential applications that take advantage of radioactive beams. While the focus will be largely on methods, opportunities for g-factor measurements will be discussed with respect to particular physics questions, some of which also require studies of ground-state moments.

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