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Transient field g-factor measurements on radioactive nuclei following alpha transfer to energetic projectiles in inverse kinematics

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In recent measurements of g factors and lifetimes of short-lived nuclear states several radioactive nuclei have been investigated which were produced in alpha-transfer reactions to stable projectiles at the Coulomb barrier employing the techniques of transient magnetic fields and Doppler-Shift-Attenuation, respectively. In particular, this method has been applied to 44Ti [1], 52Ti [2], 62Zn [3] and 68Ge [4] providing new insights into their nuclear structure which has been discussed in the framework of large-scale shell model calculations.
This novel technique can be extended to many more neutron-deficient as well as neutron-rich nuclei of the nuclear chart using respective stable nuclei at the border lines of the valley of stability as projectiles. In this respect, this possibility manifests an interesting alternative to Coulomb excitation experiments on radioactive ion beams.
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[2] K.-H. Speidel et al., Phys. Lett. B, in press
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[4] J. Leske et al., Phys. Rev. C 71 (2005) 044316

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