g-RISING: Magnetic Moments Measurements on Relativistic Isomeric Beams

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In the framework of the RISING campaign at GSI [1] we have performed magnetic moment measurements on isomeric states produced by relativistic beams and selected with the fragment separator, FRS. A novel feature of these studies is the measurement of the spin-alignment of isomeric fragments produced by ^{238}U fission at relativistic energies and the use of this alignment for the g-factor determination of isomeric states in neutron rich nuclei near ^{132}Sn [2]. The selection of a cocktail of fission fragments with the FRS opened the possibility to investigate several isomeric decays in the neutron rich Sn isotopes, both to study the lifetimes of new sub-μs isomeric states [3] and the g-factors of known μs isomers [4,5,6]. The spin-alignment in relativistic fission is compared to that in a projectile fragmentation, by producing the same Sn isotopes via a ^{136}Xe fragmentation reaction as well.
Results from the g-factor and lifetime measurements in $^{125\text{-}129}$Sn will be presented and discussed.

[1] H.-J. Wollersheim *et al*, Nucl. Instr. Meth. **A537**, 637 (2005)
[2] G. Neyens *et al.*, Act. Phys. Pol. **B38**, 1237 (2007)
"g-factor measurements on relativistic isomeric beams produced by fragmentation and U-fission: the g-RISING project at GSI"
[3] R. Lozeva *et al.*, *"New sub-μs isomers in ^{125,127,129}Sn"*, in preparation.
[4] G. Ilie *et al.*, *"Spin-alignment of a ^{126}Sn isomeric beam produced by relativistic fission of ^{238}U: a tool for g-factor studies on neutron-rich μs isomers"*, in preparation.
[5] L. Atanasova *et al.*, Proceedings of the XXV International workshop on Nuclear Theory, Rila Mountains, Bulgaria, June 26 - July 1, 2006, ed. by S. Dimitrova, Diomira., Sofia, p. 161 (2006). "*g-Factor Measurements at RISING: The Case of ^{127}Sn"* and paper in preparation.
[6] L. Atanasova *et al.*, Prog. Nucl. Part. Phys. **59**, 355 (2007)
"A RISING g-factor measurement of the 19/2$^+$ isomer in ^{127}Sn"