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Proposal to the INTC Committee

Laser Spectroscopy Studies in the Neutron-Rich Sn Region

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Summary

In this addendum to the experiment IS383, we propose to carry on the study of the neutron rich tin isotopes and isomers using laser spectroscopy to determine the magnetic moment μ and the variation of the mean square charge radius ($\delta\langle r_c^2 \rangle$). After having measured the $\delta\langle r_c^2 \rangle$ of the even isotopes up to $A=132$ with the COMPLIS experimental set-up and thus proved that this set-up is perfectly adapted for this kind of studies, we want to complete our data by measuring $\delta\langle r_c^2 \rangle$ of the heavier isotopes as far from stability as possible and μ of the odd isotopes and isomers.

The COMPLIS set-up will be used with the UC_2 target associated to the hot plasma source for the study up to mass 134. To perform laser spectroscopy on the heavier isotopes, the RILIS set-up has to be upgraded *i)* by injecting our narrow bandwidth cw laser inside the cavity of the RILIS laser to improve the frequency resolution and *ii)* by modifying the geometry of the source to reduce the Doppler width. Some tests have already been performed recently and the resolution of the laser itself has been improved by a factor of 7.

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