

Abstract Submitted  
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**OROCHI experiment - nuclear laser spectroscopy in superfluid helium for rare radioisotopes**<sup>1</sup> TAKESHI FURUKAWA, Tokyo Institute of Technology, OROCHI COLLABORATION — Spin and electromagnetic moments are one of the most important quantities for nuclear structure investigations. To determine those for rarely produced radioisotopes (RI), we now develop a new laser spectroscopic method on RI atoms stopped in superfluid helium (He II), named *OROCHI* (Optical RI-atom Observation in Condensed Helium as Ion-catcher). The method enables us to measure the atomic Zeeman and hyperfine splittings in a rare isotope (yield: < 1 particle/sec) for the determination of the spin and moments, utilizing the absorption spectra characteristic of an atom immersed in He II. To confirm the feasibility of the *OROCHI* method, we have demonstrated successful determinations of nuclear spins and moments for the stable Rb and Cs isotopes by measuring the Zeeman and hyperfine resonance in He II. Recently, we have also succeeded in producing high polarization in silver and gold atoms in He II using the characteristic spectra. In near future, we plan to measure the spins and moments of silver isotopes far from the stability line, including <sup>94</sup>Ag, one of the heaviest N=Z nuclei. Details of the development and future prospect will be discussed.

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