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Typ: Oral presentation

Present status and future prospect of the SCRIT electron scattering facility

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The SCRIT (Self-Confining RI Ion Target) electron scattering facility [1] was constructed at RIKEN in Japan to enable electron scattering from short-lived unstable nuclei. Electron scattering is a powerful tool for exploring the structure of atomic nuclei because of the well-understood mechanism of electromagnetic interaction. However, its application to short-lived unstable nuclei has been challenging because of the difficulty in preparing thick targets, even though there has been a long-standing desire to investigate exotic features of unstable nuclei using electron scattering [2].

Recently, we achieved a milestone by realizing the world's first electron scattering from online-produced unstable nuclei, ^{137}Cs , at the SCRIT facility after years of development [3,4]. Cesium nuclides were produced through the photo-fission of uranium by irradiating 28 g of uranium with a 15-W electron beam and then ionized using a surface ionization-type ion source in an ISOL system. Finally, a luminosity of $10^{26} \text{ cm}^{-2} \text{ s}^{-1}$ was achieved. This experiment serves as a perfect emulation of electron scattering from short-lived unstable nuclei produced online after upgrading the power of the ISOL driver.

In this contribution, we will present recent progress and prospects of the SCRIT electron scattering facility and discuss several topics also that may be only feasible in the future using the SCRIT method.

References:

- [1] M. Wakasugi et al., Nucl. Instr. Meth. B317 (2013) 668-673
- [2] T. Suda and H. Simon, Prog. Part. Nucl. Phys. 96, 1 (2017)
- [3] T. Ohnishi et al., Nucl. Instr. Meth. B541 (2023) 380-384
- [4] K. Tsukada et al., Phys. Rev. Lett. 131 (2023) 092502

Collaboration

SCRIT

Hauptautor: Dr. TSUKADA, Kyo (ICR, Kyoto University)

Co-Autoren: Herr ABE, Daiki (ELPH, Tohoku University); Dr. ABE, Yasushi (RIKEN Nishina Center/Univ. of Tsukuba); Frau DANJO, Rika (ELPH, Tohoku University); Dr. ENOKIZONO, Akitomo (RIKEN Nishina Center); Herr GOKE, Taiga (ELPH, Tohoku University); Dr. HARA, Masahiro (RIKEN Nishina center); Dr. HONDA, Yuki (ELPH, Tohoku University); Dr. HORI, Toshitada (RIKEN Nishina center); Dr. ICHIKAWA, Sin'ichi (RIKEN Nishina center); Dr. IIMURA, Syun (Rikkyo University); Herr ISHIKURA, Yuuma (ELPH, Tohoku University); Herr ISHIZAKI, Kazushi (ELPH, Tohoku University); Herr ITO, Yuki (ICR, Kyoto University); Prof. KURITA, Kazuyoshi (Rikkyo University); Herr LEGRIS, Crement (ELPH, Tohoku University); Herr MAEDA, Yusei (ICR, Kyoto University); Herr MAEHARA, Yoshiki (ICR, Kyoto University); Dr. OGAWARA, Ryo (ICR, Kyoto University); OHNISHI, Tetsuya (RIKEN); Prof. SUDA, Toshimi (ELPH, Tohoku University); Frau TACHIBANA, Mariko (ICR, Kyoto University); Prof. TAMAE, Tadaaki (ELPH, Tohoku University); Prof. WAKASUGI, Masanori (ICR, Kyoto University); Frau WAUKE, Hikari (ELPH, Tohoku University); Herr YAMANO, Tsubasa (Rikkyo University); Herr YOSHIDA, Satoru (ICR, Kyoto University)

Vortragende(r): Dr. TSUKADA, Kyo (ICR, Kyoto University)

Sitzung Einordnung: Thursday afternoon 2