Abstract Submitted
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Solid hydrogen target for missing mass spectroscopy in inverse kinematics YOHEI MATSUDA, Konan University — We have developed a solid hydrogen target system called "Solid Hydrogen Target for Recoil detection In Coincidence with Inverse Kinematics" (SH TRIC K). Many experiments require thin and large SHTs (e.g. 1 mm in thickness and 30 mm in diameter) to perform missing mass spectroscopy with radioactive ion beams. However, it has been difficult to make such a SHT due to thermal radiation from environment and non-uniformity of the target thickness. In order to overcome the problem, we made a ortho-para converter and a simple mechanical press. The former is used to increase a ratio of para H_2 in H_2 gas. Note that the thermal conductivity of pure para H_2 is more than 100 times larger than that of normal H_2. The latter is used to make the surface of the SHT uniform. Finally, we succeeded in making homogeneous pure H_2 targets thanks to the improvement. By using the SHTs, we have performed experiments of elastic scattering of protons with RI beams (ESPRI) at HIMAC, GSI, and RIBF. In my presentation, I will show the development and the experimental results. Furthermore, I will also talk about recent newly development for some experiments using the cryogenic system at RCNP.

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