

Abstract Submitted
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A Thick Target Method for Nuclear Astrophysics ROY J. PETERSON, University of Colorado — Many years ago, a wide array of nuclear reaction rates relevant to stellar nucleosynthesis was developed, applied, and compiled for proton- [1] and alpha-induced reactions [2]. A recent thin-target study of the $^{12}\text{C}(\text{p},\gamma)^{13}\text{N}$ reaction [3] has confirmed the accuracy one of the important examples of these thick-target thermonuclear reaction rates. The thick-target method, stopping the beam in the sample and analyzing the subsequent radioactivity or prompt gamma radiation, has many advantages, especially since it is independent of the assumed reaction mechanisms and uses all of the beam. The method and its strengths will be reviewed, and a new extension to reactions induced by radioactive ion beams in reverse kinematics in a hydrogen-rich thick sample will be presented. This method may offer advantages for the use of sparse beams.

- [1] N. A. Roughton *et al.*, At. Data and Nuclear Data Tables 23, 177 (1980)
- [2] N. A. Roughton *et al.*, At. Data and Nuclear Data Tables 28, 341 (1983)
- [3] N. Burtebaev *et al.*, Phys. Rev. C 78, 035802 (2008)

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