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Nuclear astrophysics at storage rings

Wednesday, 7 September 2022 14:00 (30 minutes)

Storage rings offer a unique approach to measure nuclear reactions using stored radioisotope beams impinging on ultra-pure internal targets. This approach has been pioneered at the ESR storage ring in GSI Laboratory (Germany).

The newly commissioned CRYRING, part of FAIR Phase-0, opens up new and ground-breaking possibilities for nuclear astrophysics at storage rings. CRYRING is the first and the only ring in the world where radioisotopes can be stored at the energies of interest for most astrophysical scenarios (<10 MeV/A).

In order to exploit this opportunity, the new CRYRING Array for Reaction MEasurement (CARME), designed specifically to detect charged-particle reactions at CRYRING, was commissioned with stored beam in 2022. CARME science programme will now be supported by an ERC Starting Grant, ELDAR.

I will introduce the topic of nuclear reaction measurement at storage rings, and describe specifically the novel scientific opportunities opened up by CARME in a wide range of stellar sites.

Field of work

Primary author: BRUNO, Carlo (The University of Edinburgh)

Presenter: BRUNO, Carlo (The University of Edinburgh)

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