

## Study of exotic nuclei made easy –a potentially novel topic for physics at the EIC

*Wednesday 4 May 2022 09:00 (20 minutes)*

Low-energy nuclear structure physics continues to be a vibrant field of research, as ever more capable rare isotope facilities look for new elements further away from stability. At these dedicated facilities, short-lived nuclei decay in flight between the production and detection points, making those with shorter decay times difficult to study. The future EIC, however, will have heavy ion beams with energies of 100 GeV/nucleon, leading to a large time dilation effect for produced exotic nuclear fragments resulting in enhanced survival probability. Further, as many of the de-excitation photons will be Lorentz upshifted to energies much larger than background photons present in the detector area, these photons can be used more easily to study the level-structure of the produced exotic nuclei. We present simulation studies of the production and detection of nuclear isotopes at the EIC in electron-heavy nucleus collisions. These studies make use of the BeAGLE generator to model the production of the intermediate, excited nucleus, followed by the de-excitation codes FLUKA and ABLA07. Simulation studies help guide constraints on the far forward detector placement.

### Submitted on behalf of a Collaboration?

No

**Authors:** DESHPANDE, Abhay; SCHMOOKLER, Barak (Stony Brook University); MORAN, Brynna (Stony Brook University); GAL, Ciprian; HARVEY, Mark (Unknown); NADEL-TURONSKI, Pawel (Stony Brook University); FINGER, Zachary

**Presenter:** MORAN, Brynna (Stony Brook University)

**Session Classification:** WG6: Future Experiments

**Track Classification:** WG6: Future Experiments