

Abstract Submitted  
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**CLAIRE - A Novel Nuclear Astrophysics Accelerator Facility at the Lawrence Berkeley National Laboratory** DANIELA LEITNER, DAMON TODD, PAUL VETTER, MATTHAEUS LEITNER, REINA MARUYAMA, KEVIN NAN XU, Lawrence Berkeley National Laboratory — CLAIRE (Center for Low Energy Astrophysics and Interdisciplinary REsearch) is a proposed nuclear astrophysics accelerator facility to be built at the 88-Inch Cyclotron at LBNL. Its primary goal will be to measure cross sections relevant to stellar burning. In particular, our focus is to build a facility powerful enough to measure the  ${}^3\text{He}({}^4\text{He}, \gamma){}^7\text{Be}$  cross section near the Gamov peak. In its first phase, this facility will consist of a high-power high-voltage platform (100mA  ${}^3\text{He}^+$  beam at 50 keV to 300 keV), four solenoid lenses, and one  $60^\circ$  bend magnet for mass separation. The high current ( $>100\text{mA}$ )  ${}^3\text{He}^+$  beam will be delivered at sub-centimeter diameter onto the cooled high density gas jet  ${}^4\text{He}$  target. Germanium detectors will be used to detect the  $\sim 1$  MeV  $\gamma$  line resulting from this reaction. As a possible second phase, a short linear post accelerator section could be added to widen the applicability of the facility to cover a higher range of energies of interest for stable ion beam astrophysics cross sections in the CNO and NaNe cycle. The preliminary layout of this new experimental facility will be shown and discussed.

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