Reactions that are important in nuclear astrophysics often have small cross sections making them difficult to experimentally measure. In this talk I will examine some of the difficulties associated with making these measurements, and some potential solutions to measure these small cross sections. I will discuss my work at the Laboratory of Experimental Nuclear Astrophysics (LENA), which is part of the Triangle Universities Nuclear Laboratory, including preliminary results using a multi-crystal HPGe detector. I will also present a novel new design for an underground accelerator that will allow for high precision measurements of small cross section reactions.