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Design of a compact, low-energy-charged-particle-spectrometer for stellar nucleosynthesis experiments at OMEGA and the NIF E. ARMSTRONG, J. FRENJE, M. GATU JOHNSON, C.K. LI, H. RINDERKNECHT, M. ROSENBERG, F.H. SEGUIN, H. SIO, A. ZYLSTRA, R.D. PETRASSO, MIT — A compact "Orange" Spectrometer is being designed for measurements of alpha and proton spectra in the range of $\sim$ 1-5 MeV, produced in low-yield ^{3}He^{3}He experiments at the OMEGA laser and at the National Ignition Facility (NIF). Particle ray-tracing through magnetic fields, modeled by COMSOL, were conducted with the code Python. The goal is to identify an optimal setup for a spectrometer to measure alpha particles at relatively low energies and at low yield. Ability to study the alpha particles in addition to the protons is essential for understanding the nuclear physics governing the final-state interactions between pairs of particles in the three-body final state. This work was supported in part by the U.S. DOE and NLUF.

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