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Alpha Cluster States in ^{16}O[1] BRYCE FRENTZ, ARMEN GYURJINYAN, ETHAN SAUER, WANPENG TAN, ANTHONY BATTAGLIA, ANDREW NYSTROM, CLARK CASARELLA, MALLORY SMITH, PATRICK O'MALLEY, SCOTT MARLEY, SABRINA STRAUSS, ANDRE BERMUNDEZ-PEREZ, BENJAMIN GUERIN, PATRICK FASANO, ANI APRAHAMIAN, University of Notre Dame, MICHAEL FEBRARRO, Oak Ridge National Laboratory, RAMÓN TORRES-ISEA, FREDERICK BECCHETTI, University of Michigan, MARTIN FREER, University of Birmingham, GVIROL GOLDRING, Weizmann Institute — The reaction ^{13}C(α, n)^{16}O and the subsequent breakup of ^{16}O was measured at the University of Notre Dame Nuclear Science Laboratory in order to explore states above the 4α decay threshold in ^{16}O thought to exhibit α-cluster behavior. Locating and understanding these states is crucial to understanding the structure of light nuclei by providing stringent tests for nuclear models. Alpha clusters also play a significant role in stellar evolution because reaction rates for helium burning are sensitive to these structures. The charged particles were detected using four double-sided silicon strip detectors with 256 total channels while the neutrons were detected with 12 deuterated liquid scintillators. Details of the experimental setup, data analysis, and preliminary results will be presented.

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