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Abstract Submitted

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Alpha Cluster states in O ARMEN GYURJINYAN, ETHAN SAUER, BRYCE FRENTZ, WANPENG TAN, ANTHONY BATTAGLIA, ANDREW NYSTROM, CLARK CASARELLA, MALLORY K. SMITH, PATRICK O'MALLEY, SCOTT T. MARLEY, SABRINA STRAUSS, ANDRE BERMUNDEZ-PEREZ, BENJAMIN GUERIN, PATRICK FASANO, ANI APRAHAMIAN, Department of Physics, University of Notre Dame, Notre Dame, IN 46556, USA, MICHAEL FEBBRARO, RAMON O. TORRES-ISEA, FREDERICK D. BECCHETTI, Department of Physics, University of Michigan, Ann Arbor, MI 48109, USA, MARTIN FREER, School of Physics and Astronomy, University of Birmingham, Birmingham B15 2TT, United Kingdom, GVIROL GOLDRING, Department of Particle Physics, Weizmann Institute, 76100 Rehovot, Israel — search for α -cluster states is an open and interesting question in nuclear structure and has implications for the understanding of helium burning in stars. We carried out an experiment to explore α -cluster states above the 4α -decay threshold in via the (α,n) reaction at the University of Notre Dame's Nuclear Science Laboratory. The experimental setup included four double-sided strip detectors with 256 channels to measure energies and angular distributions of charged particles and 12 deuterated liquid scintillators were used to detect neutrons in the angular range 22° . By reconstructing reaction kinematics α -cluster levels in can be obtained. The experimental setup and preliminary results will be presented. work was supported by the NSF under contract number PHY – 1419765.

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