The (7Be,3He) Reaction: A New Tool for Alpha Spectroscopy¹

F.D. BECCHETTI, H. AMRO, HAO JIANG, A.N. VILLANO, M. OJARUEGA, U. Michigan-Ann Arbor, J.J. KOLATA, A. ROBERTS, U. Notre Dame, TWIN SOL COLLABORATION — Recent experiments done at the UM-UND low-energy RNB facility TwinSol have shown that the (7Be,3He) reaction selectively populates alpha-cluster states (in the case studied, 16O) with relatively large cross sections [1]. As will be discussed, this reaction has a number of advantages over both (6Li,d) and (7Li,t) as an alpha-transfer reaction and in particular this reaction for various reasons is not a direct analog of (7Li,t). Thus it can be considered to be a new tool (among few available) for identifying alpha-cluster states in nuclei. Further experiments are planned both at the TwinSol facility as well as the new ReA facility at MSU. To facilitate experiments at UND, a new large (ca.1 m dia.) chamber has been built to accommodate large area position-sensitive detectors and improved time-of-flight. Also, a new technique for making single-sided enriched oxygen targets suitable for low-energy (7Be,3He) studies has been developed and will be reported elsewhere (M. Febraro et al., this conference).


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