Abstract Submitted
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α-Clusters in ^{16}O P.A. COPP, S.R. LESHER, Univ. of Wisconsin - La Crosse, A. APRAHAMIAN, S. ALMARAZ, B. BUCHER, M. COUDER, X. FANG, F. JUNG, W. LU, N. PAUL, A. ROBERTS, W.P. TAN, Univ. of Notre Dame, G. GOLDING, Y. SCACHAR, Weizmann Institute of Science, Israel, N. ASHWOOD, M. BARR, N. CURTIS, M. FREER, J. MALCOLM, C. WHELDON, V. ZIMAN, Univ. of Birmingham, UK — There has been previous experimental evidence of an interesting four α linear configuration in ^{16}O [1]. At the Notre Dame FN Tandem Accelerator we explored the reaction of ^{12}C+$\alpha\rightarrow^{16}$O$\rightarrow^{8}$Be+^{8}Be. An array of Si strip detectors was set up at the forward angles to observe the final individual four α- particles [2]. Afterwards, from the ^{8}Be+^{8}Be channel, an excitation curve was constructed for an energy range of 12- 20 Mev. In addition a ^{12}C (α, n) transfer reaction was carried out to study the same α-cluster structure in ^{16}O, which required additional neutron detectors placed at the backward angles. Interesting α-cluster levels detected in the two reactions will be analyzed in detail (such as the angular distribution). The preliminary results on the existence of the linear α structure will be presented.

[1] P. Chevallier *et al.*, Phys. Rev. **160**, 827 (1967).
[2] P.J. Haigh *et al.*, J. Phys. G: Nucl. Part. Phys. **37**, 035103 (2010).

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