

Abstract Submitted
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Vertex Reconstruction for the $^{10}\text{C}(\alpha,\alpha)^{10}\text{C}$ scattering reaction using the Prototype Active-Target Time-Projection Chamber¹ T. AHN, J. LAI, D. W. BARDAYAN, M. BRODEUR, M. HALL, O. HALL, J. HU, J. J. KOLATA, J. LONG, P. O'MALLEY, University of Notre Dame, Y. AYYAD, D. BAZIN, S. BECEIRO NOVO, J. BRADT, M. CORTESI, L. CARPENTER, W. MITTIG, NSCL, Michigan State University — The investigation of the importance of α -cluster structure on the proton-rich side of stability in the light nucleus ^{14}O has been investigated using a $^{10}\text{C}(\alpha,\alpha)^{10}\text{C}$ scattering reaction. The Prototype Active-Target Time-Projection Chamber was used to provide a He gas target and image charged-particle tracks. The key experimental observables that are needed are the vertex position, which determines the energy at which the reaction occurred. The precision of this vertex position gives the reaction energy uncertainty, which needs to be determined to a few mm. The performance of various algorithms for vertex reconstruction will be presented including their advantages and disadvantages. The impact of the energy resolution on particle identification and determining cross sections for the α -resonant scattering experiment will be presented.

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