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**Stucture of $^{9}$C from the d($^{10}$C,$t$)$^{9}$C Reaction and the Reliability of Ab Initio Transfer Form Factors**[1] S.T. MARLEY, A.H. WUOSMAA, S. BEDOOR, J.C. LIGHTHALL, D.V. SHETTY, Western Michigan, M. ALCORTA, P.F. BERTONE, J.A. CLARK, C.L. JIANG, T. PALCHAN-HAZAN, R.C. PARDO, K.E. REHM, A.M. ROGERS, R.B. WIRINGA, ANL, C.M. DEIBEL, LSU, C. UGALDE, U.Chicago/JINA — A paucity of information exists on the structure of the neutron-deficient nucleus $^{9}$C which is accessible to *ab-initio* calculations such as the Quantum Monte Carlo approach. In addition to excitation energies in the A=9 & 10 systems, it is possible to calculate the spectroscopic overlaps relevant for the neutron-pickup reaction $d(^{10}\mathrm{C},t)^{9}\mathrm{C}$. To test these predictions of the neutron-pickup spectroscopic factors, we have studied the $^{10}\mathrm{C}(d,t)^{9}\mathrm{C}$ reaction, in inverse kinematics. A 171-MeV $^{10}$C beam was produced at the ATLAS In-Flight Facility with an intensity of $2\times10^{4}$ pps and was incident on a deuterated polyethylene $[\mathrm{CD}_2]_n$ target. The ground-state transition was clearly observed in a series of silicon detector arrays and angular-distribution data were extracted. The neutron-pickup spectroscopic factor was deduced from a comparison with distorted-wave calculations, with both traditional and QMC-derived bound-state form factors. A comparison between the results of these methods will be presented.

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