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Origin of multiple quantum oscillation frequencies from single carrier nodal pocket in the underdoped cuprate superconductor YBCO SUCHITRA E. SEBASTIAN, G.G. LONZARICH, University of Cambridge, N. HARRISON, M.M. ALTARAWNEH, NHMFL, Los Alamos, R. LIANG, D.A. BONN, W.N. HARDY, University of British Columbia — Quantum oscillations are measured in the underdoped high T_c cuprate superconductor $YBa_2Cu_3O_{6+x}$, revealing multiple frequencies. An extended study over a broad angular range and magnetic field range up to 95 T accompanied by detailed harmonic analysis is presented, establishing the multiple frequencies to arise from Fermi surface reconstruction yielding a single carrier nodal pocket. Scenarios are presented for the origin of multiple frequencies from this nodal pocket.

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