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Improved accuracy in the COAX diagnostic for measuring supersonic radiation wavefront profiles[1] TODD URBATSCH, PAWEL KOZLOWSKI, HEATHER JOHNS, N.E. LANIER, C.L. FRYER, CHRISTOPHER FONTES, Los Alamos National Laboratory, C.R.D. BROWN, J.W. MORTON, Atomic Weapons Establishment, S.R. WOOD, A.S. LIAO, Los Alamos National Laboratory, J.M. COALE, Los Alamos National Laboratory / North Carolina State University, T.S. PERRY, Los Alamos National Laboratory — LANL's COAX ("coax") is a diagnostic on Omega to infer the spatial profile of a supersonic radiation wave. It has a laser-driven halfraum to drive a Marshak wave down a cylinder of Ti-laden aerogel and uses a side-view Kr backlighter and Ti absorption spectroscopy to infer a radiation temperature profile. Recently, the process for analyzing the experimental data has been improved and automated using a generalized Boltzmann plotting technique, an inverse method, to determine the temperature and to resolve discrepancies between spectroscopy and atomic physics models. The technique, along with drive perturbation analysis and more stringent experimental tests of the COAX diagnostic, have improved the accuracy of the diagnostic.

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