Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Experiment to measure oxygen opacity at high density and temperature[1] PAUL KEITER, HANNAH BUTLER, MATT TRANTHAM, Univ of Michigan - Ann Arbor, KATIE MUSSACK, JAMES COLGAN, CHRIS FONTES, JOYCE GUZIK, DAVID KILCREASE, TED PERRY, Los Alamos National Laboratory, CHRIS ORBAN, Ohio State University, JEAN-ERIC DUCRET, MAELLE LA PENNEC, SYLVAINE TURCK-CHIEZE, CEA/Service dAstrophysique, CE Saclay, ROBERTO MANCINI, University of Nevada, Reno, ROBERT HEETER, Lawrence Livermore National Laboratory — In recent years, there has been a debate over the abundances of heavy elements (Z >2) in the solar interior. Recent solar atmosphere models [Asplund 2009] find a significantly lower abundance for C, N, and O compared to models used roughly a decade ago. Recent opacity measurements of iron disagree with opacity model predictions [Bailey et al, 2015]. Repeated scrutiny of the experiment and data has not produced a conclusive reason for the discrepancy. New models have been implemented in the ATOMIC opacity code for low-Z elements [Colgan, 2013, Armstrong 2014]], however no data currently exists to test the low-Z material models in the regime relevant to the solar convection zone. We present an experimental design using the opacity platform developed at the National Ignition Facility to study the oxygen opacity at densities and temperatures near the solar convection zone conditions.

[1]This work is funded by the U.S. DOE, through the NNSA-DS and SC-OFES Joint Program in HEDLP, grant number DE-NA0002956, and the NLUF Program, grant number DE-NA0002719, and through the LLE, University of Rochester by the NNSA/OICF under No. DE-NA0001944

Paul Keiter
Univ of Michigan - Ann Arbor

Date submitted: 14 Jul 2017 Electronic form version 1.4