Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Spectral measurements of a short-pulse driven quasi-continuum backlighter for absorption spectroscopy PAUL KEITER, Los Alamos National Laboratory, CSILLA SZABO-FOSTER, Naval Research Laboratory, NICK LANIER, MARTIN TACCETTI, Los Alamos National Laboratory — In order to verify that the modeling of radiation flow is correct, experimental measurements are required. Typically lasers irradiate a hohlraum producing an x-ray source. These x-rays heat a medium, often a low-density foam, driving a temperature front. Characterization of this front is crucial for understanding radiation flow. Absorption spectroscopy measures a material's charge state and requires a quasi-continuum source of x-rays. Often a tracer material is used to localize the measurement. There are two options for making the absorption spectroscopy measurement; long duration ($>$ 1ns) or short duration ($<$ 30 ps) backlighter (BL). A long duration BL allows for data to be collected at different times, however, care must be taken in analyzing the spectral measurements because the experimental conditions may change on this timescale. A short pulse measurement might only allow for a single measurement, but the system will have less time to evolve. Experiments have been performed at the OMEGA EP laser studying a quasi-continuum spectrum of a foil target generated by both long pulse (1ns) and short pulse (20 & 40 ps) laser beams. We present the requirements for a planned NIF radiation flow experiment, the experimental measurements from OMEGA EP and future plans.

Paul Keiter
Los Alamos National Laboratory

Date submitted: 16 Jul 2010 Electronic form version 1.4