

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

**Determination of the Electron Temperature of a Hot Gold Plasma
Utilizing High-Resolution X-Ray Spectroscopy of the L-Band Emission¹**

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LLNL, C.S. AUSTRHEIM-SMITH, K.V. CONE, H.A. BALDIS, UC Davis — The
x-ray emission of high-temperature plasmas contains a wealth of information about
the plasma conditions. A plasma parameters of interest is the electron temper-
ature, which can be determined from the distribution of the ionic species in the
plasma. Each ion charge distribution emits a characteristic x-ray spectrum and,
thus, high-resolution x-ray spectroscopy provides a tool to observe this characteristic
“fingerprint”. The “L-band” spectrometer was designed to determine the electron
temperatures in laser-heated gold hohlraums by measuring the 3d — 2p transitions
in highly charged gold ions. Recent L-band measurements at the OMEGA laser fa-
cility on high-temperature hohlraums will be presented and compared to LASNEX
calculations.

¹Work performed under the auspices of DOE by UCLLNL under Contract # W-
7405-Eng-48 and supported by DOE’s NLUF grant DE-FG52-2005NA26017.

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Date submitted: 25 Jul 2006

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