

Abstract Submitted  
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**Extreme ultraviolet absorption measurements of low  $Z$ , low density, low temperature plasmas at the Orion Laser Facility** LAUREN HOBBS, COLIN BROWN, DAVID HOARTY, MATTHEW HILL, STEVEN JAMES, PETER ALLAN, AWE Plc, ORION LASER TEAM — Experiments have been carried out to demonstrate a platform on the Orion laser to study the equation of state of low  $Z$  elements in a low density, low temperature regime (around mg/cc, 10s eV). In this regime equation of state models based on Thomas-Fermi ion cell predict significant departure from ideal-gas + ionization predictions. In these experiments absorption measurements using point-projection backlighting aim to determine the change in ionisation as a function of material density at constant temperature to test model prediction. Initial work reported has shown that absorption data can be taken from X-ray heated samples with sufficient accuracy; short-pulse, high-contrast pulses can be used to explode the sample foil to the required low density, and a new XUV grating spectrometer has been commissioned and used for absorption measurements.

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