Abstract Submitted
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**Cylindrically converging radiative shocks in noble gases driven by the MAGPIE pulsed-power device** GUY BURDIAK, S. LEBEDEV, ICL, ADAM HARVEY-THOMPSON, SNL, G. SWADLING, F. SUZUKI-VIDAL, ICL, J. SKIDMORE, AWE, L. SUTTLE, M. BENNET, ICL, G. HALL, L. PICKWORTH, LLNL, P. DE GROUCHY, Cornell, S. BLAND, N. NIASSE, ICL, R. RODRIGUEZ, J. GIL, G. ESPINOSA, Universidad de Las Palmas de Gran Canaria — Experimental data from gas-filled cylindrical liner z-pinch experiments are presented. The current discharge from the MAGPIE pulsed-power device at Imperial College London (1.4MA,240ns) is applied to a thin walled (80$\mu$m) Al tube with a static gas-fill inside (initial gas density 10-5 g/cc). The system is used to drive cylindrically converging strong shock waves ($U_s$ = 20km/s) into different gases. Axial diagnostics include interferometry, optical streak photography and time gated, spatially resolved optical spectroscopy. The experimental geometry is nominally uniform along the diagnostic line of sight and in addition the shock waves show a high degree of azimuthal symmetry. This allows determination of the radial dependence of axially averaged plasma parameters ($n_e$,$T_e$). The spectroscopy diagnostic is used to determine the temperature profile across the shock (in the precursor and post-shock regions) in different noble gases. Comparisons are made between experimental temperature and electron density profiles and the 1D radiation-MHD code HELIOS-CR. In addition, varying degrees of shock stability are seen in different noble gases. These observations will be briefly compared to cooling function calculations and analytical stability models.

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