

Abstract Submitted  
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**Doppler shift and broadening of H-like and He-like Al lines in imploded arrays on MAGPIE and COBRA pulsers experiments** S.A. PIKUZ, J.D. DOUGLASS, T.A. SHELKOVENKO, D.A. HAMMER, Cornell University, Ithaca, NY, G.N. HALL, S.V. LEBEDEV, S.N. BLAND, S.C. BOTT, J.P. CHITTENDEN, Imperial College, London, UK — Strong broadening and clearly visible “red” and “blue” shifts of K-shell spectral lines as a function position along the array axis have been observed in the time-integrated spectra of 8-32 wire Al arrays in experiments on the MAGPIE (1.2 MA, 240 ns risetime) and COBRA (1.1 MA, 100 ns risetime) pulsed-power generators. Spectra were recorded using focusing spectrographs with spherically bent mica crystals (FSSR) in configurations in which the film was positioned out of Rowland circle and the influence of the spatial position on a line position in the spectral direction on the film is not negligible. To separate the spectral and spatial shift of the spectral lines, two wide-band spectrographs with 3 spherically bent crystals each (WB-FSSR) with radius of curvature 182 mm have been used in a mirror-symmetric configuration. The measured Doppler shift of the spectral lines varied along the pinch axis and reached  $\pm 0.015 \text{ \AA}$  corresponding to a radial plasma velocity of  $\pm 5 \times 10^7 \text{ cm/s}$ . This research was sponsored by the NNSA under DOE Cooperative Agreement DE-F03-02NA00057.

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