Abstract Submitted
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Shedding light on arc cathode spots IAN FALCONER, ROBERTO SANGINES, School of Physics, University of Sydney, ONDREJ NOVAK, Department of Physics, University of West Bohemia, ADAM ISRAEL, DAVID MCKENZIE, MARCELA BILEK, School of Physics, University of Sydney — We have used a high-speed camera to analyze the motion of the multiple co-existent cathode spots in the University of Sydney's high-current pulsed arc, which move in a direction opposite to that expected from Lorentz force equation, and developed a model to explain our observations. Time resolved optical emission spectroscopy has also been employed to link the emission intensity of the species in the arc plasma with the cathode spot dynamics and to infer trends in the evolution of the charge state distribution. The shape of the spectral line of the excited species that are ejected from the spots is of relevance to understanding the physics of the spots. As these ions are created towards the edge of the spot and lose their excitation as photons at the boundary of the spot the line shape and shift will give the velocity of the ions near the boundary of the spot. A combination of a Fizeau interferometer, an intensified CCD camera and a grating spectrometer have been used to obtain time-resolved spectral line shapes for the pulsed arc. The results of these measurements will be discussed.

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