Abstract Submitted
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Temporally resolved optical emission spectroscopy for studies of level-to-level discharges.[1] KEITH HERNANDEZ, MATTHEW GOECKNER, LAWRENCE OVERZET, University of Texas at Dallas — Phase Resolved Optical Emission Spectroscopy (PROES) is a powerful tool for the study of radio frequency (rf) discharges. In continuous wave discharges, one needs to accurately trigger against the rf cycle so as to measure the temporal variation of the emission intensity. With modern high-speed cameras, this can result in excellent time resolution within the rf cycle. Such studies become more difficult in level-to-level discharges. This is because the trigger needs to be in reference to both the rf cycle and the level-to-level transitions. In this paper we will examine some of the experimental techniques that need to be employed in order to attain temporally resolved PROES (TR-PROES) in our m-GEC system. We show that the excitation function derived from TR-PROES for the Ar 750.4 nm line is approximately a single pulse (˜10 ns) within the 80 ns rf cycle (12.5 MHz). Initial results indicate that essentially only the strength of this excitation function increases during the plasma transition from low to high power.

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