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Coupled plasma and gas dynamics in pulsed microplasmas MANISH JUGROOT, Royal Military College of Canada — There is a great interest in understanding plasmas in small spaces as the complexity of micro-technology systems increases. A self-consistent model of plasma and neutral gas dynamics is applied to pulsed atmospheric microplasmas in helium. Fluid equations of the self-consistent and time-dependant model are described with emphasis on the close coupling among plasma, neutral gas and the electric field. The microplasmas are studied from an initial cloud and both continuous and recurring voltage pulses are investigated. Gas heating and neutral depletion initiation are observed, highlighting the close interaction between neutral gas and charged species in governing the evolution of the microplasmas.

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