

Abstract Submitted  
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**Characterization of cluster/monomer ratio in pulse supersonic gas jets**<sup>1</sup> RICHARD KORZEKWA, XIAOHUI GAO, XIAOMING WANG, BONGGU SHIM, ALEXEY AREFIEV, MIKE DOWNER, Institute for Fusion Studies, University of Texas at Austin, Austin, Texas 78712 — We determine cluster mass fraction  $f_c(\mathbf{r}, t)$  at position  $\mathbf{r}$  within, and time  $t$  after firing, a pulsed supersonic gas jet by measuring femtosecond evolution of the jet's refractive index by single-shot frequency domain holography. A fs pump pulse singly ionizes monomers, while quasi-statically ionizing and heating clusters to a level at which recombination remains negligible as clusters expand. Under these conditions, index evolves in two simple steps corresponding to monomer and cluster contributions, allowing recovery of  $f_c$  without detailed cluster dynamic modeling. Variations of  $f_c$  with  $t$  are measured.

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