Comparison of Plasma Sound Velocity to Plasma Expansion Velocity

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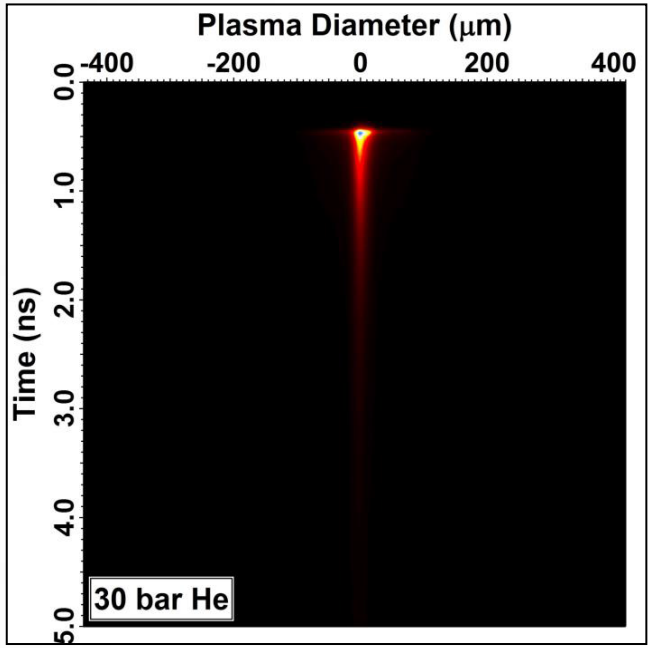

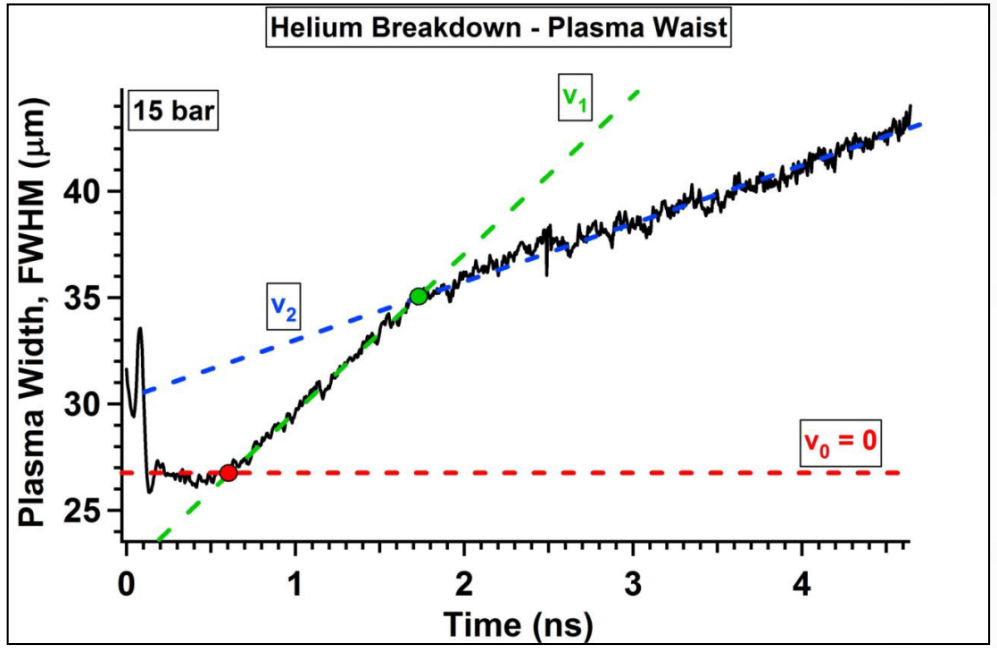

Helium Pressure (bar)	t_{flat} (ns)	t_2 (ns)	Linear Fit v_1 (km/s)	Linear Fit v_2 (km/s)
1	< 0.05	~1.75	12.78 ± 0.07	3.07 ± 0.02
5	0.095	~1.75	7.58 ± 0.06	3.45 ± 0.05
15	0.85	~1.75	7.39 ± 0.06	2.57 ± 0.02
30	0.85	~1.75	5.75 ± 0.05	2.14 ± 0.02
40	0.85	~1.75	6.76 ± 0.05	2.19 ± 0.02

$$c_s = \sqrt{\frac{ZkT_e + 3kT_i}{m_i}}$$

For helium at T = 11,000 K, Z = 1, and $T_i \ll T_e$,

c_s = 4,780 m/s

Does Plasma Contraction at Short Times Imply that a Cold Dense Plasma acts like it has a Tensile Strength

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Bataller et al.