

Spacecraft Propulsion Utilizing Ponderomotive Forces

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A new spacecraft propulsion scheme is proposed which leverages advances in high-energy particle acceleration via laser-plasma interactions. Ponderomotive forces associated with laser wakefields have demonstrated the potential to accelerate electrons to near-relativistic energies. Different schemes will be investigated which may generate quasi-steady fields for deep-space and manned space missions. Ponderomotive propulsion could revolutionize space travel by providing very high thrust at very high specific impulses.

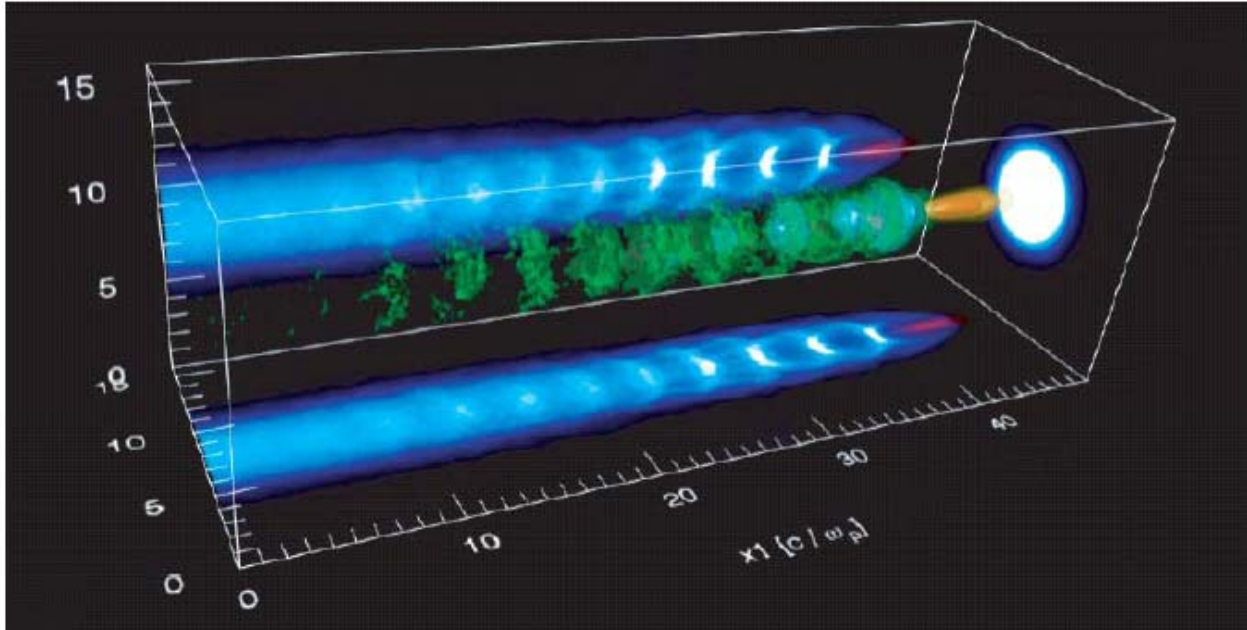


Figure: Three dimensional wakes resulting from an intense relativistic beam. Isosurfaces of electron density data are shown.