# Strong Interplay Between Superluminosity and Radiation Friction During Direct Laser Acceleration of Electrons Within a Magnetic Filament

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Even though direct laser acceleration at ultra-high intensities has been extensively studied, the impact of superluminosity on electron dynamics remains relatively unknown. The superluminosity (phase velocity larger than the speed of light) is unavoidable during laser propagation through plasma and thus must be taken into account. We have examined the direct laser acceleration of electrons within a static magnetic filament driven by a high-intensity laser within a plasma in the regime where the electrons also experience the force of radiation friction caused by the emission of electromagnetic radiation. We found that the interplay of superluminosity and radiation friction manifests as an attractor effect: the electrons with various initial energies reach roughly the same maximum energy and emit the same power in the form of gamma rays. The discovered effect is directly relevant to laser-plasma interactions at high-intensity multi-PW laser facilities.