

# Recent Advances on Laser-Plasma Based Soft X-Ray Lasers

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Intense and short soft X-ray light pulses offer unprecedented possibilities for studying ultrafast phenomena in matter at the nanometer scale. Plasma-based soft X-ray lasers (SXRLs) have the advantage of being compact sources. We report recent achievement aiming to demonstrate the control and reduction of duration of a seeded collisional soft X-ray laser induced by the anticipated interruption of the gain lifetime at high densities. By controlling the peak intensity velocity of an ultrashort beam by spatio-temporal couplings we improve the performances of a seeded soft X-ray laser (SXRL).