Abstract Submitted
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Attosecond Lighthouse Effect: from tilted waves to isolated harmonic beams JONATHAN WHEELER, ANTONIN BOROT, Laboratoire d'Optique Appliquée, HENRI VINCENTI, SYLVAIN MONCHOCE, CEA Saclay, AURELIEN RICCI, AURELIE JULLIEN, ARNAUD MALVACHE, Laboratoire d'Optique Appliquée, FABIEN QUERE, CEA Saclay, RODRIGO LOPEZ-MARTENS, Laboratoire d'Optique Appliquée, PCO GROUP TEAM[1], GROUPE PHYSIQUE À HAUTE INTENSITÉ TEAM[2] — Spatio-temporal coupling (STC) within a laser pulse is normally a negative feature to be avoided as it leads to non-uniform pulse characteristics and reduced intensity at focus. In this study, STC is purposefully introduced into the laser pulse leading to wavefront rotation at the focus. When such a modified focus is applied to plasma mirror harmonic generation, each harmonic pulse produced from cycle to cycle has a shifted propagation direction. Dependant on the degree of wavefront rotation introduced, this can lead from tilted harmonic spectra due to small displacements of the overlapping beams to fully isolated, individual pulses arising from each cycle of the driving laser pulse, the so-called Attosecond Lighthouse effect. This work discusses the recently measured results of spatially-separated, single harmonic beams from a solid target source obtained with 1kHz, CEP-locked, 800nm laser pulses of both 25 and 5 fs duration.

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