SEMINAIRE SPAM

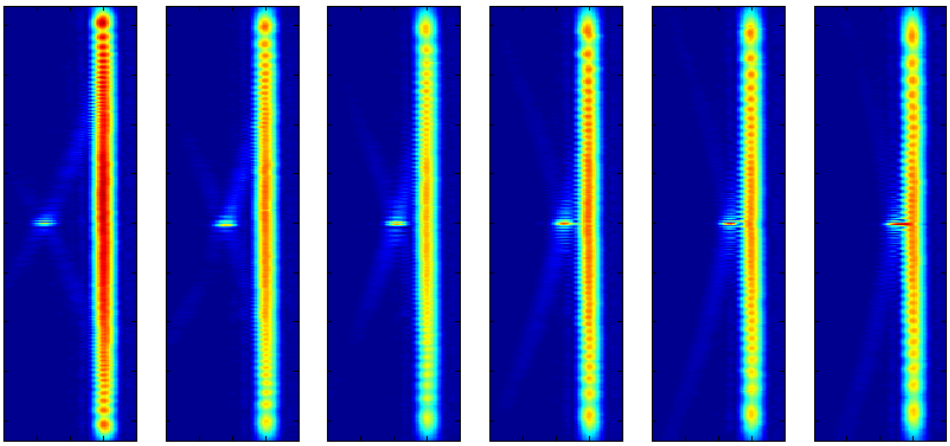
Pamela BOWLAN

Georgia Tech, School of Physics & Swamp Optics, LLC

Le Mardi 23 février 2010 à 11h00

Bâtiment 522 - Salle 136

«Measuring the complete spatiotemporal field of ultrashort laser pulses with femtosecond temporal and sub-micron spatial resolutions»



Measuring the temporal intensity and phase of ultrashort laser pulses directly out of a laser is now routine. But today's fundamental studies often involve much more interesting pulses, like those propagating inside nanostructures, interacting with a plasma, or scattered from a living cell. Measurement of these pulses will not simply tell us how well our lasers are aligned, but instead will possibly lead to new technologies or a better understanding of physical phenomena. New pulse-measurement techniques need to be able to measure, not merely *laser* pulses, which are relatively simple in space and time, but more generally, *light* pulses, which may not be so simple in space and time. Therefore the goal of our recent research has been to develop simple devices that can measure complex light pulses—in time *and* space. I will discuss one such technique, called SEA TADPOLE, for measuring the complete spatiotemporal field, $E(x,y,z,t)$ of ultrashort pulses with femtosecond temporal and sub-micron spatial resolutions. These measurements can be viewed as "snap shots" in flight of the propagating ultrashort pulse. Using this device, we made the first direct measurements of focusing ultrashort pulses and observed some interesting distortions, such as the "fore-runner" pulse and radially varying group-delay dispersion. We have also measured the electric field of Bessel X-pulses, demonstrating their propagation invariance and superluminal velocity. Additionally, we revisited basic diffraction phenomena by measuring ultrashort pulses in space and time after propagation through simple apertures. Such an approach allows for a more intuitive understanding of near-field diffraction.

Formalités d'entrée :

Visiteur U.E. : ***Se faire connaître au moins 48 heures à l'avance pour l'établissement de votre autorisation d'entrée sur le Centre de Saclay.***
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Sans autorisation, vous ne pourrez entrer sur le Centre de Saclay. Tél. : 33.1.69.08.30.95 - Fax : 33. 1.69.08.76.39 - email : caroline.lebe@cea.fr ou veronique.gereczy@cea.fr
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