Contribution ID: **1403** Type: **Poster (Student, In Competition) / Affiche (Étudiant(e), inscrit à la compétition)**

Peak Intensity and Energy Confinement Enhancement of Airy Bullets

Tuesday 14 June 2016 19:10 (2 minutes)

Over the last few years, Airy beams have attracted an increasing interest due to their peculiar characteristics, such as accelerating propagation trajectories featuring non-dispersion along with self-healing properties. Beside their relevance for fundamental optics research, these beams have found numerous applications in several fields including, among others, the generation of curved plasma channels and optical trapping. An Airy beam propagates following a curved trajectory without diffracting along one or two spatial dimensions. Similarly, an optical pulse featured by an Airy temporal profile is not affected by dispersion during its propagation (i.e. its temporal shape remains unchanged). Thus, by combining such confinements both in time and space, it is possible to generate a 3D-confined accelerating optical beam, which does not diffract/disperse along any coordinate, named Airy Bullet (AB). Herein, we present a numerical study of these AB dynamics, providing a technique capable of optimizing the power features associated to the spatio-temporal confinement of such a bullet. In particular, we show that by reshaping the initial spatio-temporal spectrum of the AB in order to obtain a maximal overlap with the spectral content associated with the main lobe, one is able to readily contain the spatio-temporal expansion of such a bullet.

Primary author: BONGIOVANNI, domenico (INRS)

Presenter: BONGIOVANNI, domenico (INRS)

Session Classification: DAMOPC Poster Session with beer / Session d'affiches avec bière DPAMPC

Track Classification: Division of Atomic, Molecular and Optical Physics, Canada / Division de la physique atomique, moléculaire et photonique, Canada (DAMOPC-DPAMPC)