Physics > Optics

Ionization-induced asymmetric self-phase modulation and universal modulational instability in gas-filled hollow-core photonic crystal fibers

Mohammed F. Saleh, Wonkeun Chang, John C. Travers, Philip St.J. Russell, Fabio Biancalana

(Submitted on 9 Apr 2012)

We study theoretically the propagation of relatively long pulses with ionizing intensities in a hollow-core photonic crystal fiber filled with a Raman-inactive gas. Due to photoionization, previously unknown types of asymmetric self-phase modulation and `universal' modulational instabilities existing in both normal and anomalous dispersion regions appear. We also show that it is possible to spontaneously generate a plasma-induced continuum of blueshifting solitons, opening up new possibilities for pushing supercontinuum generation towards shorter and shorter wavelengths.

Comments: 5 pages, 4 figures
Subjects: **Optics (physics.optics)**
Cite as: **arXiv:1204.1892 [physics.optics]**
(or **arXiv:1204.1892v1 [physics.optics]** for this version)

Submission history

From: Mohammed Saleh [view email]
[v1] Mon, 9 Apr 2012 14:44:33 GMT (891kb,D)

Which authors of this paper are endorsers?