Nonlinear Sciences > Pattern Formation and Solitons

# Filamentation processes and dynamical excitation of light condensates in optical media with competing nonlinearities

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*(Submitted on 26 Feb 2010)*

We analyze both theoretically and by means of numerical simulations the phenomena of filamentation and dynamical formation of self-guided nonlinear waves in media featuring competing cubic and quintic nonlinearities. We provide a theoretical description of recent experiments in terms of a linear stability analysis supported with simulations, showing the possibility of experimental observation of the modulational instability suppression of intense light pulses travelling across such nonlinear media. We also show a novel mechanism of indirect excitation of {\em light condensates} by means of coalescence processes of nonlinear coherent structures produced by managed filamentation of high power laser beams.

Comments: 6 pages, 4 figures
Subjects: **Pattern Formation and Solitons (nlin.PS)**
Cite as: **arXiv:1002.5036v1 [nlin.PS]**

## Submission history

From: David Novoa [view email]
**[v1]** Fri, 26 Feb 2010 18:20:29 GMT (413kb)

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