

Stability of Multipole-mode Solitons in Thermal Nonlinear Media

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(Submitted on 2 Jan 2010)

We study the stability of multipole-mode solitons in one-dimensional thermal nonlinear media. We show how the sample geometry impacts the stability of multipole-mode solitons and reveal that the tripole and quadrupole can be made stable in their whole domain of existence, provided that the sample width exceeds a critical value. In spite of such geometry-dependent soliton stability, we find that the maximal number of peaks in stable multipole-mode solitons in thermal media is the same as that in nonlinear materials with finite-range nonlocality.

Comments: 16 pages, 4 figures, to appear in Phys. Rev. A

Subjects: **Pattern Formation and Solitons (nlin.PS)**

Cite as: [arXiv:1001.0300v1](https://arxiv.org/abs/1001.0300v1) [nlin.PS]

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[v1] Sat, 2 Jan 2010 12:31:17 GMT (190kb)

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