

# Nonlinear Waves Group

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## Department

Department E' (Electronics-Computers-Telecommunications-Control).

## Main Team Members

- Dimitrios J. Frantzeskakis, Professor (dfrantz@phys.uoa.gr)
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## Short Description

Research of the Nonlinear Waves Group focuses on nonlinear waves and solitons with applications in various physical contexts. These include atomic Bose-Einstein condensates (BECs), nonlinear optics (optical fibers, waveguides, waveguide arrays, photonic lattices), electromagnetics (nonlinear waves in metamaterials, complex media, plasmas), and others.

## Selected Publications

- M. J. Ablowitz, S. D. Nixon, T. P. Horikis, and D. J. Frantzeskakis, Dark solitons of the power-energy saturation model: Application to mode-locked lasers, *J. Phys. A: Math. Theor.* **46**, 095201 (2013) (18 pages).
- V. Achilleos, D. J. Frantzeskakis, P. G. Kevrekidis, and D. E. Pelinovsky, Matter-wave bright solitons in spin-orbit coupled Bose-Einstein condensates, *Phys. Rev. Lett.* **110**, 264101 (2013) (5 pages) (arXiv:1211.0199).
- F. Tsitoura, V. Achilleos, B. A. Malomed, D. Yan, P. G. Kevrekidis, and D. J. Frantzeskakis, Matter-wave solitons in the counterflow of two immiscible superfluids, *Phys. Rev.* **A87**, 063624 (2013)
- G. P. Veldes, J. Borhanian, M. McKerr, V. Saxena, D. J. Frantzeskakis, and I. Kourakis, Electromagnetic rogue waves in beam-plasma interactions, *J. Opt. (Special issue on *Optical Rogue Waves*)* **15**, 064003 (2013) (10 pages).
- A. S. Rodrigues, P. G. Kevrekidis, R. Carretero-González, J. Cuevas, D. J. Frantzeskakis, and F. Palmero, From nodeless clouds and vortices to gray ring solitons and symmetry-broken states in two-dimensional polariton condensates, *J. Phys.: Cond. Matt.* **26**, 15801 (2014) (11 pages) (arXiv:1308.6798).

## Research Projects

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