



## DISSIPATIVE SOLITONS IN FIBER LASERS

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### Abstract:

We introduce the concept of dissipative solitons, which emerge as a result of a double balance: between nonlinearity and dispersion and also between gain and loss. Such dissipative solitons have many unique properties which differ from those of their conservative counterparts and which make them similar to living things. We focus our discussion on dissipative solitons in fiber lasers, which can be described by the cubic-quintic complex Ginzburg-Landau equation (CGLE). In the field of nonlinear optics, the CGLE can describe also several other systems, namely optical parametric oscillators, free-electron laser oscillators, and all-optical transmission lines.

### Biography:

Mario F. S. Ferreira graduated in Physics from the University of Porto, Portugal, and received the Ph.D. degree in Physics in 1992 from the University of Aveiro, Portugal, where he is now a Professor at the Physics Department. Between 1990 and 1991 he was at the University of Essex, UK, performing experimental work on external cavity semiconductor lasers and nonlinear optical fiber amplifiers.



### Publication of speakers:

- Modeling and simulation of electromagnetically induced transparency in hollow-core microstructured optical fibres.
- Converting pulsating dissipative optical solutions into fixed-shape pulses.
- Light propagation in gas-filled kagomé hollow core photonic crystal fibres.
- Supercontinuum generation in chalcogenide layered spiral microstructured optical fiber.

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