NANOPHOTONICS TECHNOLOGY CENTER

UNIVERSIDAD POLITECNICA DE VALENCIA

PhD position on experimental Two-Dimensional Dissipative Solitons and Frequency Combs

Nanophotonics Technology Center

(Universitat Politècnica de València, Spain)

2D spatiotemporal solitons in nonlinear Kerr media [1-3], never observed thus far, constitute an exciting and promising generalisation to higher dimensions of the well-known microcombs in microring resonators. These new waves are the carriers of spatially sparse frequency combs offering unique opportunities to explore the formation of higher power, broader, and higher resolution coherent microrombs. This project aims at a radically new strategy to excite integrated frequency combs by exploiting intrinsically multi-dimensional physical phenomena with no lower dimensional analogues.

We are offering a PhD position at the Nanophotonics Technology Center (https://ntc.webs.upv.es/) to work on the experimental realisation of robust two-dimensional spatiotemporal solitons in novel integrated geometries (fabricated in-house with silicon nitride and other materials) in the context of the recently awarded *Plan Nacional* project (PID2024-157370NB-I00). The successful candidate will be integrated into the research team consisting theoreticians (at IUMPA-UPV and at ICFO-Nonlinear Phenomena Group) as well as experimentalists and PIC fabricators (at NTC-UPV).

Candidates must have a degree in physics or electrical/telecommunications engineering. Other profiles may be considered. Master studies related to optics and/or nanotechnology will be very valuable. A high level in English is mandatory. Salaries will be according to FPI/FPU grants.

Interested candidates should send a motivation letter (1 page) and a short CV to both Prof. Alejandro Martínez (amartinez@ntc.upv.es) and A/Prof. Carles Milián (carmien@upvnet.upv.es).

Application deadline: until position is filled

Starting date: as soon as possible from 1st October, 2025.

[1] C. Milián et al. Phys. Rev. Lett. 121, 103903 (2018).
[2] S. B. Ivars et al. Phys. Rev. Lett. 126, 063903 (2021).
[3] S. B. Ivars et al. Nat. Photon. 17, 767 (2023).