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## Postdoctoral Fellowships



### CALL FOR APPLICATIONS 2025 – FELLOWS

<b>Supervisor</b>	Mathieu Mivelle
<b>Supervisor page</b>	<a href="https://www.researchgate.net/profile/Mathieu-Mivelle">https://www.researchgate.net/profile/Mathieu-Mivelle</a>
<b>Host Institution</b>	Centre National de la Recherche Scientifique (CNRS) <a href="https://www.cnrs.fr/en">https://www.cnrs.fr/en</a>
<b>Research Lab</b>	Institute of NanoSciences of Paris <a href="https://w3.insp.upmc.fr/en/insp-en/">https://w3.insp.upmc.fr/en/insp-en/</a>
<b>Research Team</b>	Nanophotonics and Quantum Optics <a href="https://w3.insp.upmc.fr/en/research/research-teams/nanophotonics-and-quantum-optics/">https://w3.insp.upmc.fr/en/research/research-teams/nanophotonics-and-quantum-optics/</a>

#### Project Title

Manipulating the Quantum Photon-Avalanche Process with Plasmonic Nano-Antennas

#### Project Description

Natural phenomena like earthquakes and forest fires exhibit self-organized criticality with avalanche-like behavior. In optics, a similar “photon avalanche” arises in  $Tm^{3+}$ -doped nanoparticles (ANPs), yielding highly nonlinear emission. By coupling ANPs with plasmonic nano-antennas, this project aims to control avalanche dynamics via SNOM, spectroscopic, and power-dependent studies. Collaborations with UC Berkeley and Columbia promise groundbreaking findings and applications.

#### Keywords

avalanche behavior, highly nonlinear optical processes, plasmonic and nanophotonic antennas

#### Description of the Host Research Lab

The Institute of NanoSciences of Paris (INSP) brings together teams from four condensed matter physics laboratories. Its scientific objectives are at the heart of fundamental research in nanosciences, but it also has a wide range of applications: optoelectronics and telecommunications, earth sciences and the environment, catalysis and medical diagnostics.

To submit your application, please send an email with the required documents to  
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