Two-year postdoc position at Institut d'Optique (Bordeaux)

Modelling and applications of nanoresonators

Education desired: Applicants should hold a PhD in physics, with experience in computational nanophotonics, including an expertise of COMSOL Multiphysics. They should have excellent scientific writing and oral communication skills, as well as the ability to work effectively and collaboratively with experimentalists.

Our group has recently developed state-of-the-art knowledge on the modal analysis of electromagnetic resonators [1] and has recently launched the first freeware MAN [2]. Following several years of work carried out in "autarky", the group now enjoys many solicitations of experimentalists: on mode volume [Gurioli, LENS, P182, P195], hybrid cavities [Koendering, AMOLF, P182, P188], quantum surface effects in nanocavities [Soljacik, MIT, P185], nonlinear nanooptics [Léo, MPQ, P192], strong coupling [Raschke, Boulder, P189], couple mode theory [Brongersma, Stanford]. We also collaborate with theoreticians on cavity perturbation theory [Yan, Westlake, P194] and the numerical method [Duruflé, Inria-Bordeaux P200].

Job description (Starting date: Sept-Oct 2020**):** We offer a two-year postdoc position to continue our effort. The theoretical part will consist in refining/improving MAN. The most important part of the work will consist in exploring new opportunities in which quasinormal mode theory helps understanding/interpreting experiments. This will be done with our collaborators.

Please send your detailed CV to **philippe.lalanne@institutoptique.fr** with contact references.

[1] P. Lalanne, W. Yan, K. Vynck, C. Sauvan and J.-P. Hugonin, Laser Photonics Rev. **12**, 1700113 (2018), "Light interaction with photonic and plasmonic resonances"
[2] W. Yan, R. Faggiani, P. Lalanne, Phys. Rev. B **97**, 205422 (2018). "Rigorous modal analysis of plasmonic nanoresonators"
[3] Y. Yang et al., Nature **576**, 248–252 (2019). "A General Theoretical and Experimental Framework for Nanoscale Electromagnetism"
[4] K. G. Cognée et al., Optica **6**, 269-273 (2019). "Mapping Complex Mode Volumes with Cavity Perturbation Theory"
[5] T. Wu, A. Baron, P. Lalanne, and K. Vynck, Phys. Rev. A 101, 011803(R) (2020). "Intrinsic multipolar contents of nanoresonators for tailored scattering"
[6] D. Pellegrino et al., Phys. Rev. Lett. **124**, 123902 (2020).

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