

Seminar

Friday 28th October

10h00

Amphitheatre du C2N

“Shedding nano-light on quantum materials”

Dmitri N. Basov



Dmitri N. Basov (PhD 1991) is a Higgins professor and Chair of the Department of Physics at Columbia University [<http://infrared.cni.columbia.edu>], the Director of the DOE Energy Frontiers Research Center on Programmable Quantum Materials and co-director of Max Planck Society – New York Center for Nonequilibrium Quantum Phenomena. He has served as a professor (1997-2016) and Chair (2010-2015) of Physics, University of California San Diego. Research interests include: physics of quantum materials, superconductivity, two-dimensional materials, infrared nano-optics. Prizes and recognitions: Sloan Fellowship (1999), Genzel Prize (2014), Humboldt research award (2009), Frank Isakson Prize, American Physical Society (2012), Moore Investigator (2014, 2020), K.J. Button Prize (2019), Vannevar Bush Faculty Fellowship (U.S. Department of Defense, 2019), National Academy of Sciences (2020).

In this talk, he will describe two recent experiments harnessing nano-scale polaritonic waves (“nano-light”) for probing excitonic effects in van der Waals semiconductors [1] and unconventional electronic properties in the nodal metal ZrSiSe [2].

[1] A. J. Sternbach, S. H. Chae, S. Latini, A. A. Rikhter, Y. Shao, B. Li, D. Rhodes, B. Kim, P. J. Schuck, X. Xu, X.-Y. Zhu, R. D. Averitt, J. Hone, M. M. Fogler, A. Rubio, and D. N. Basov, “Programmable hyperbolic polaritons in van der Waals semiconductors,” *Science* 371, 617 (2021).

[2] Yinming Shao, Aaron J. Sternbach, Brian S. Y. Kim, Andrey A. Rikhter, Xinyi Xu, Umberto De Giovannini, Ran Jing, Sang Hoon Chae, Zhiyuan Sun, Seng Huat Lee, Yanglin Zhu, Zhiqiang Mao, J. Hone, Raquel Queiroz, A. J. Millis, P. James Schuck, A. Rubio, M. M. Fogler, D. N. Basov “Infrared Plasmons Propagate through a Hyperbolic Nodal Metal” (*Science Advances* 2022).

A joint research unit

