

Colloque – Département de physique / Colloquium – Department of Physics
 Faculté des sciences / Faculty of Science
 3 Octobre 2024 / October 3, 2024 14 h 45 / 2:45 p.m.
 (Café à 14 h 15 / Coffee at 2:15 p.m.) **ARC233**
 Hôte / Host: Pawel Hawrylak



Magnons, magnon polarons and spin-entangled optical resonances in semiconducting van der Waals antiferromagnets

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Two-dimensional materials beyond graphene offer a remarkable platform for exploring the unique electronic, optical, and magnetic properties of low-dimensional systems. Among these are van der Waals layered magnets, particularly the family of metal phosphorus trichalcogenides (MPX₃, where M = Mn, Fe, Co, Ni, and X = S, Se). These MPX₃ compounds are semiconducting antiferromagnets with varied spin-ordering configurations.

This talk will present the results of magneto-spectroscopy studies (Raman scattering, far- and near-infrared optics, EPR) on several representative layered antiferromagnets, including MnPS₃, MnPSe₃, FePS₃, FePSe₃, NiPS₃, and CoPS₃. The focus will be on identifying the diverse spectra of magnon-gap excitations, exploring magnon-phonon coupling, and discussing the origin of the intriguing spin-entangled optical transitions observed in certain materials in this class."



Dr. Marek Potemski graduated from the University of Warsaw (1980); Ph.D. from the Polish Academy of Sciences (1986); carried out his research at the Institute of Physics Warsaw (1980-1991), before joining the permanent staff of the French Centre National de la Recherche Scientifique (CNRS), as a researcher, successively as a leader of the "Semiconductors and Nano-Physics" group, at the French National High Magnetic Field Laboratory in Grenoble, and, currently, as an emeritus CNRS senior researcher. He is an expert in electronic properties of 2D systems and semiconductor nanostructures including application of magnetic fields, (~450 publications, ~14000 citations, supervision of 18 Ph.D. and 24 postdoctoral projects). Potemski is a fellow of the American Physical Society and an elected member of the Academy of Europe.

