



UNIVERSITÀ DI PAVIA  
Dipartimento di Fisica



## Short course

**Wednesday 30 November 2022 h. 11-13 Aula A109**

**Thursday 1 December 2022 h. 11-13 Aula A104**

**Prof. Mikhail Vasilevskiy  
University of Minho, Portugal**

# **Plasmonics, graphene and other 2D materials**

Course contents:

1. Metals and free electron excitations (plasmons); localised and propagating surface plasmons, surface plasmon-polaritons (SPPs).
2. Graphene: crystal structure, chemical bonds, electron energy spectrum and electronic properties; brief overview of other properties and applications.
3. SPPs in graphene-based structures: dispersion relation, excitation methods; working principles of some sensing and optoelectronic devices.
4. Brief introduction to the non-linear optical properties of graphene.
5. (*depending on time availability*) Nearly 2D semiconductors, the transition metal dichalcogenides (TMDs): electronic properties, excitons, selected applications.