Università di Roma Tor Vergata

Institute of Structure of Matter (**ISM**) of the National Research Council (**CNR**) of Rome, Italy

AND

Physics Department of the University of Rome "Tor Vergata", Italy


FLASHit

**Division of Ultrafast Processes in Materials**

## Two Post-doc positions (1+1 year) focused on

# Simulation of the dynamics of systems taken out-of-equilibrium by means of ultra-intense and ultra-short laser pulses.

**available in the groups of**

**Dr. Andrea Marini and Prof. Gianluca Stefanucci**
**(Consiglio Nazionale delle Ricerche, CNR-ISM Montelibretti and Dept. of Physics, Univ. of Rome "Tor Vergata", It)**

**Topic:** The objective of this project is to provide a complete, consistent and accurate theoretical analysis of the various phenomena that occur as a result of the optical excitation of paradigmatic nanostructures, solids and molecular aggregates via ultra-fast and intense laser pulses. To this end we will develop theoretical and innovative numerical approaches based on the accuracy of ab-initio techniques for the study of the dynamics of systems brought out of equilibrium by strong and short laser pulses. These theoretical and numerical tools will be used to address complex nanostructures up to hundreds of atoms. We will develop approximations and techniques for the solution of the equations that govern the dynamics out of equilibrium in the framework of the theory of non-equilibrium Green's functions.
The numerical implementations will be carried out in open-source code Yambo.

**Funding:** European H2020 Project and Italian PRIN-MIUR.
**Salary:** 2.200-2.400 Euros/month
**Duration:** 1 year, renewable
**Start:** End of 2021 – Beginning of 2022
**Location:** the activity will be carried out at Rome (CNR-ISM and Tor Vergata University), Italy.
**Required Expertise:** A PhD in Physics, Materials Science or related disciplines is needed. Extensive experience in first-principles simulations is mandatory.
The ideal candidate should have a Ph.D. in condensed matter theory, a basic background in Many-Body Perturbation Theory, programming skills and possibly previous experience with DFT codes.

**How to apply:** expressions of interest should be sent to gianluca.stefanucci at roma2.infn.it and andrea.marini at cnr.it. They should include: Curriculum Vitae, Description of previous achievements (max 1 page), List of publications and Names and email addresses of at least two referees who might be contacted for a letter of reference.