



MARIE SKŁODOWSKA-CURIE POSTDOCTORAL FELLOWSHIPS 2021
EXPRESSION OF INTEREST FOR HOSTING MARIE CURIE FELLOWS

HOST INSTITUTION

NOVA University Lisbon | School of Science and Technology

RESEARCH GROUP AND URL

LIBPhys
<https://www.libphys.fct.unl.pt/>

SUPERVISOR (NAME AND E-MAIL)

Pedro Amaro
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SHORT CV OF THE SUPERVISOR

Pedro Amaro is Assistant Professor at the Physics Department of NOVA School of Science and Technology, as well as also visiting researcher at Max-Planck Institute for Nuclear Physics. His research interests include numerous topics of atomic physics and x-ray spectroscopy, including both experimental and theoretical aspects: laboratory measurement of cross sections atomic processes relevant for astrophysics; high-precision x-ray spectroscopy in highly charged ions for testing QED; laser spectroscopy in muonic atoms; two-photon and second-order processes; atomic structure and resonant processes; plasma modelling; x-ray fundamental parameters; x-ray fluorescence spectroscopy and applications. Published 50 manuscripts.

5 SELECTED PUBLICATIONS

- P. Amaro, et al, Phys. Rev. A, 103, 012811 (2021).
- J. J. Krauth, CREMA collaboration, Nature, 589, 527-531 (2021).
- F. Grilo, et al, Astrophys. J., 932, 140, (2021).
- C. Shah, et al, Astrophys. J., 881 100 (2019).
- P. Amaro, et al, Phys. Rev. A, 93, 032502 (2016).

PROJECT TITLE AND SHORT DESCRIPTION

This project will establish a systematic evaluation of two-photon rates of astrophysical interest. The forbidden transition of $2s-1s$ is a prime example of the substantial experimental and theoretical work dedicated to the first excited state of the simplest atom of hydrogen and this effort was originally triggered from astrophysics, since it is the prime source of continuum. Besides H-like and He-like ions, there are no calculations of TP for other isoelectronic sequences available nowadays. While some single unpaired electron isoelectronic sequences. Such cases include the isoelectronic sequences of alkaline-earth metals, such as Be-like or Mg-like ions. The role of these new calculations will be attested in astrophysical collision-radiative models in order to try to justify recent discrepancies in observations.

SCIENTIFIC AREA WHERE THE PROJECT FITS BEST*

Physics (PHY)