

Master 2 "Systèmes Complexes, Optique, Lasers (SCOL)": Research Training 2022-2023
 Master 2 "Matter Molecules and their Environment(MME)": Research Training 2022-2023

Appel à sujet de stage recherche / Call for research training subject

Laboratory: PhLAM

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Collaborator(s):

Topic: Laboratory Astrophysics

Master 2: select the master and the most appropriate option

<input type="checkbox"/> Master 2 SCOL	x Master 2 MME (GP-SCP)
<input type="checkbox"/> Option Complex Systems (GP-IKS)	<input type="checkbox"/> Option Condensed Matter
	<input type="checkbox"/> Option Condensed Matter/Pharma
	x Option Dilute Matter and Spectroscopy
	<input type="checkbox"/> Option Atmospheric Sciences
	x Option Modeling at the molecular & atomic scales

Molecular Spectroscopy of Malononitrile: A Case Study for the Detection in the Interstellar Medium

Currently about 270 different molecules have been detected in the interstellar medium or circumstellar shells. Each astrophysical survey requires accurate modelling of molecular spectrum based on laboratory observations in the terahertz range. This is the only way to ensure unambiguous astrophysical detection of molecules. The goal of the research training is to measure, to analyze and to model the rotational spectrum of malononitrile $\text{CH}_2(\text{CN})_2$, a complex organic species that recently attracted a particular interest of astrophysicists. Following the laboratory study of malononitrile, a collaboration with astronomers is planned, and the data obtained will be deposited online in Lille Spectroscopic Database <https://lsd.univ-lille.fr>

Key words: molecule, spectroscopy, terahertz, astrophysics