



9-11 febbraio 2026

Laboratory astrophysics

Lasers, supersonic jets and nonequilibrium thermodynamics

Lucile Rutkowski

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In this series of three short (40-mins) and approachable lectures, Dr. Lucile Rutkowski will introduce the audience to the fascinating world of molecular spectroscopy in supersonic jets, where environments similar to the interstellar clouds are recreated in a lab.

Her voyage will start from astrochemistry and satellite observations, meander through the fascinating world of generating and probing ultracold supersonic jets, and land in the realm of photonic techniques for high-resolution, high-sensitivity molecular spectroscopy in the gas phase.

Lecture 1 – Monday Feb. 9th, 12:00-13:00, room VA.1

Detecting chemical reactions in deep space: from earth telescopes to the James Webb Space Telescope era

Lecture 2: Tuesday Feb 10th, 12:00-13:00, room VA.1

Deep space in a lab: experiments with a supersonic jet

Lecture 3: Wednesday Feb 11th, 14:30-15:30, room V2.11

Photonics tricks to probe cold molecules: infrared spectroscopy with frequency combs



Lucile Rutkowski obtained a PhD degree in molecular spectroscopy at the Institut Lumière Matière in Lyon. In 2018 she joined the French National Centre for Scientific Research (CNRS) as a permanent researcher at the Institut de Physique de Rennes, where she works in the Molecular Physics department. Her research focuses on the development of precision spectrometers for laboratory astrophysics, combining optical frequency combs with advanced techniques such as Fourier transform spectroscopy and cavity ring-down spectroscopy. Her work aims to reproduce and study the physical chemistry of extreme environments such as the interstellar medium and planetary atmospheres. In 2024 she was awarded the Peter Werle Award for her contributions to the field of laser spectroscopy.

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