

Plenary Talk

EXPLOITING THE DIVERSITY OF NEW WORLDS

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Exoplanet detection surveys over the last 20 years have revealed a surprising diversity of planets orbiting other stars this revolution is fueled by existential questions about the place of Earth and the Solar System in the Universe. How do planets form? What ranges of architectures of planetary systems exist? How does our solar system fit into this context? And perhaps the most exciting of all: do other life-bearing planets exist?

The study of exoplanet atmospheres is the next step in leveraging exoplanetary detections. This is because a planets atmosphere provides a fossil record of its primordial origins and controls its fate, size, appearance, and ultimately habitability. In this context, I present comparative exoplanetology programs that aim at characterising planetary systems transiting nearby stars through the observations of their atmospheres. Our findings on the atmospheric composition and physical properties provide insights into the formation and evolution of planetary systems and enhance our understanding of our own Solar Systems formation. Finally, I also present strategies for probing habitable exoplanet atmospheres in the quest of bio-signatures.