UNIVERSITÉ CÔTE D'AZUR | GRADUATE SCHOOL FORMAL, PHYSICAL AND ENGINEERING SCIENCES

1) Field of study : Algebraic geometry

2) Internship topic : ENRIQUES MANIFOLDS

3) Description :

An Enriques surface is a smooth projective surface X that admits a two-to-one cover by a K3 surface (i.e. a simply connected surface Y such that $K_Y \simeq \mathcal{O}_Y$ and $H^1(Y, \mathcal{O}_Y) = 0$). After studying the relevant basic notions (intersection theory on surfaces, positivity properties of divisors, cohomology of sheaves), the first goal is to understand some basic properties of Enriques surfaces (like the existence of an elliptic fibration $X \to \mathbb{P}^1$). Then we want to see what happens in higher dimension: an Enriques manifold is a projective manifold such that the universal cover is an irreducible holomorphic symplectic manifold. Following the work of Oguiso and Schröer we want to understand the classical examples of complex symplectic manifolds and see what conditions this imposes on Enriques manifolds.

4) Internship level : Master 2

5) Requirements :

- Solid background in probability and statistic theory and/or geometry,
- Possible knowledge in spatial statistics,
- Goog knowledge in progeamming languages (as Python, R, C++ or Matlab).

6) Duration : 4 to 6 months

7) Period : From January to July 2024

8) Laboratory : LJAD

9) Contact :

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