Seminari Informal
de Matemàtiques de Barcelona

***Speaker*:**	Josu Pérez Zarraonandia.
University:	Universitat de Barcelona.

Date:	Wednesday, June 12th, 2024.
Schedule:	13:00, *coffee break*; 13:20, talk.
Place:	UB (FMI aula IA) and Zoom.
Language:	English.

Title:	An Illustrative Example of Class Field Theory: Abelian Extensions of $\mathbb{Q}(i)$ via the Lemniscatic curve

Abstract: The class field theory of $\mathbb{Q}$ is elegantly described in terms of the cyclotomic extensions $\mathbb{Q}(\zeta_n)$. The process of adjoining roots of unity to $\mathbb{Q}$ yields abelian extensions, with any abelian extension of $\mathbb{Q}$ contained in at least one such extension. In general, the main theorem of class field theory asserts that the abelian extensions of a number field are described by the closed subgroups of its idele class group with finite index.

While this formulation represents a significant milestone in 20th-century number theory, the adelic approach to class field theory abstracts away from an explicit description of abelian extensions in terms of algebraic integers. The aim of this talk is to explain how we can recover this explicit description for the abelian extensions of $\mathbb{Q}(i)$ using torsion points on the lemniscatic curve.

About us: *SIMBa* is a mathematics seminar organized by graduate students in the Barcelona area. It is aimed towards graduate and last–year undergraduate students. Our goals are disseminating knowledge from different branches of mathematics for those interested and promoting networking between the attendants.

This seminar is backed by the Faculty of Mathematics and Computer Science at Universitat de Barcelona, Faculty of Mathematics and Statistics at Universitat Politècnica de Catalunya, the Department of Mathematics at Universitat Autònoma de Barcelona, CRM, IMUB and BGSMath.

Fore more information, visit seminari-simba.github.io/en. You may contact us by sending an email to ***seminari.simba@gmail.com***.