

The logo for SIMBa, consisting of the text "SIMBa" in a bold, black, serif font on a bright orange rectangular background.

BGSMath
BARCELONA GRADUATE
SCHOOL OF MATHEMATICS

Seminari Informal de Matemàtiques de Barcelona

Speaker: Daniel Gil Muñoz.

University: Charles University in Prague.

Date: Wednesday, October 6th, 2021.

Schedule: 12:00, *virtual coffee break*; 12:20, talk.

Place: Zoom (the link will be posted on our website).

Language: English.

Title: On the possible ranks of universal quadratic forms over totally real number fields

Abstract: A quadratic form $Q(X_1, \dots, X_n)$ over the integer numbers is said to be universal if it represents all positive integers, that is, for every $a \in \mathbb{Z}_{>0}$ there is a vector $(\alpha_1, \dots, \alpha_n) \in \mathbb{Z}^n$ such that $Q(\alpha_1, \dots, \alpha_n) = a$. The topic of universal quadratic forms is quite classical in arithmetic; for instance, Langrange's 1770 four square theorem asserts that the sum of four squares is a universal quadratic form over \mathbb{Z} . In this talk we consider the suitable generalization of universality for quadratic forms over the number ring \mathcal{O}_K of a totally real number field K and view some recent results on the possible ranks (number of variables X_i) of universal quadratic forms over different families of totally real number fields.

About us: *SIMBa* is a youth mathematics seminar organized by graduate students in the Barcelona area. It is aimed towards graduate and last course undergraduate students. Our goals are divulging the knowledge from different branches of mathematics for those interested and promote 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 from Univesitat Autònoma de Barcelona, CRM, IMUB and BGSMath.

Fore more information, visit at www.ub.edu/simba/en/.

If you have any doubt or comment do not hesitate to contact us by sending an email to seminari.simba@gmail.com.