

PhD Course in Mathematics XXXVI cycle, a.y. 2020/2021

n. 1 scholarship funded by Università Cattolica del Sacro Cuore, linked to the research project: “A study of particular algebraic-geometric structures”.

Abstract

Firstly, the student is expected to integrate his preparation with the basic theory of associative and non-associative algebras, finite groups and their representations on algebraic and geometrical structures. Secondly, he has to get confident with the state of art of the knowledge on the decided research programme and have a complete and up to date picture of it, acquiring, if necessary, also some notions in geometry of combinatorics, that will be useful for his course of study. His research activity will cover a study of some algebraic-geometric structures such as axial algebras, octonions and their generalisations, on which the finite simple groups can be effectively represented or to construct suitable linear and semi linear spaces (Clifford parallelisms, soluble designs, generalized quadrangles and hexagons). To this aim, the student is expected to learn how to use scientific computing softwares such as GAP, Magma, Singular. Pursuant to current legislation of the doctorate school, the student has to spend a studying period, coherent with his reasearch programme, abroad. Finally, he is expected to present the results of his work in both national and international scientific meetings