

# On the O’Nan-Scott theorem in its applications

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**Timetable:** 14 hrs. First Lecture on April 10, 2014, 11:00 (dates already fixed, see the calendar), Torre Archimede, Room 2BC/30.

**Course requirements:** Only some basic and elementary facts on the Theory of Groups are needed.

**Examination and grading:** Short presentation on a mutually agreeable subject related to the content of the course.

**SSD:** MAT/02

**Aim:** We aim to show how the pivotal O’Nan-Scott theorem on finite primitive groups has been (and is) used to study some problems on finite permutation groups or finite combinatorial structures.

## **Course contents:**

In the first part of this course, we present one of the fundamental theorems for analysing finite primitive groups: the O’Nan-Scott theorem. Loosely speaking, this result gives a satisfactory classification of the algebraic structure of finite primitive groups together with some information on the group actions.

The O’Nan-Scott theorem combined with the Classification of the Finite Simple Groups turned out to be an invaluable tool for analysing and studying some combinatorial objects.

In the second part of the course, we present some of these applications, mostly on the theory of group actions on graphs.