

# The classification of wallpaper patterns

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**Calendario:** 1, 2, 5, 7, 9, 14 e 16 ottobre 2009, dalle 11.30 alle 13.30, in aula 2BC/30

**Prerequisiti:** Elementary notions of group theory

**Tipologia di esame:** oral discussion

**Programma del corso:**

- We will use group theory to classify the symmetry of certain two-dimensional figures called wallpaper patterns. The way one classifies symmetry of geometric objects is to associate to the object a group, called its symmetry group, and then to classify the possible symmetry groups. The study of symmetry groups of wallpaper patterns began in the nineteenth century by people studying crystals. While many mathematicians know that there are exactly 17, up to isomorphism, symmetry groups of wallpaper patterns, most do not know why this is true. The purposes of this course is to show how to obtain the classification. While much of the classification can be understood by a good undergraduate student, our approach to the classification should be of interest to Phd students, including algebraists, due to the use of group cohomology and spectral sequences.