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Dipartimento di Matematica e Informatica

## Seminar Announcement

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### Problems on $k$ -convex polyominoes

Giusi Castiglione, University of Palermo

Thursday 3rd April 2014, 3 p.m.

Room 7, Via Archirafi 34, 90123 Palermo

A polyomino is a finite union of elementary cells of the lattice  $\mathbb{Z} \times \mathbb{Z}$ , defined up to translation, whose interior is connected. Polyominoes have been used in popular puzzles since the late 19th century, but were first studied systematically by Solomon W. Golomb in 1954 and popularized by Martin Gardner in 1957. Polyominoes are the object of many combinatorial problems, the first is the enumeration for various parameters. No formula has been found for the general class whereas, exact formulas are known for enumerating polyominoes of special classes. These objects have been studied from many other points of view. One of the most important is the problem to tile the plane by polyominoes and covering regions by rectangles. Equivalent objects called animals are studied in physics. Cause the difficulty of the general problems, in any field, many restrictions was introduced in the general class. Such restrictions are obtained by the geometrical notion of convexity. An example is the  $k$ -convexity, introduced in this talk. In particular, an efficient algorithm for the exhaustive generation of  $k$ -convex polyominoes will be exposed and an algorithm that gives the degree of convexity of any convex polyominoes given as input.

For further information:

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*All interested people, in particular students, are invited to participate*