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**"The magic of the East: from the Alhambra to Sammezzano Castle"  
Symmetries in mathematics, nature and art**

**Abstract**

The small students' passion for Mathematics is known. Understanding that the basics for further math skills development are determined in primary school, we chose a project involving 9 to 14 year old students from the Reggello school (Florence, Italy). The project is part of a multi-year course titled "The Pleasure of the Beautiful" with the idea of appreciating the beauty of mathematics and its relationship with other disciplines. In this project we chose to talk about symmetry as a key reading idea to understand art and architectural works, considering it as one of the central ideas of mathematics of the twentieth century. The opportunity was offered by the presence in our landscape of the Sammezzano Castle, a beautiful Moorish style building, built in 1605 by the Ximenes D'Aragona family and restored by Ferdinando Panciatici between 1853 and 1889 according to Orientalist fashion, fashionable in Florence at that time. The castle is rich in geometric decorations and tiles with reference to the Alhambra mosaics. In this contribution we describe the Sammezzano Castle, the historical, geographical and geological environment where the castle stands. We illustrate the teaching activities in the classroom, outdoor and in the computer lab (*visit to Sammezzano Castle, analysis and reproduction of geometric figures and floorings related to tiling, and decorations in the Alhambra palace and the Sammezzano Castle, floor plan experiences, construction of mandala with goniometer and ruler, experiences on geometric transformations such as symmetries, realizing fantastic symmetries and fantasy games on the figures obtained, interdisciplinary laboratory on the geological history of the area where the castle stands - Pliocenic lake, realization of an exhibition with guided tours by students*). We illustrate the reactions of students and their families in the organization of the exhibition.

*Remark* (by the Organizers): This is an Oral Presentation associated with the Exhibition with the same ID number.

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