Mathematics and Music: algebraic, categorical and computational methods in the maths/music research (Part 2)

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Course requirements:

Examination and grading:

SSD: MAT/02, MAT/03.

Aim: Despite a long historical relationship between mathematics and music, the interest of mathematicians for Music Theory is a recent phenomenon. The aim of this doctoral course on mathematics and music is to give a structural multidisciplinary approach into computational musicology making use of advanced mathematical tools. It is based on the interplay between different mathematical disciplines: algebra, topology and category theory. New results and perspectives are possible on important challenges such as revealing through suitable mathematical tools musical properties, studying the computational aspects of musical processes, preparing the automatic classification of musical styles.

Course contents: The second part of the course focuses on three specific topics in mathemusical research: homometry and neo-riemannian musical theories; Word theory and its application to scales, modes, chords and rhythms; Categorical formalization of transformational theory. This second part of the course shows some non-trivial intersections between different domains in mathematics (algebra, combinatorics, category theory) that are applied to music-theoretical and analytical situations dealing with the formalisation and representation of musical structures and processes.

References:

• David Clampitt and Thomas Noll, “Modes, the Height-Width Duality, and Handschin’s Tone Character”, *Music Theory Online*, Vol. 17, Issue 1. Available online at:
