IC SEMINAR &
COMPUTATIONAL NEUROSCIENCE SEMINAR

LABORATORY OF COMPUTATIONAL NEUROSCIENCE (LCN)

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Friday, February 27th, 2015
10h15, Room BC 420

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Musical structure at the intersection between music theory, cognition and computation

Music constitutes a complex and highly structured form of human interaction and communication that involves a large range of cognitive processes and mechanisms in production and perception. Basic musical tasks such as mere listening, melody recall and recognition, style recognition, creation of expectancies or, for instance, the ability to recognize (stylistic) mistakes in a musical excerpt rely on internalized knowledge of the syntactic rule system governing any musical style, be it Western tonal music from Monteverdi to the Beatles, North Indian music, modal early music, or Jazz improvisation. Questions concerning the formal structure of music and its processing have been the focus of recent interdisciplinary debates. In this context, the understanding of the properties of musical structure is not only of core importance to the understanding of the musical mind but also constitutes a cornerstone for digital musicology and computational processing of music as a fundamentally mental phenomenon. Lerdahl & Jackendoff (1983) have specified a theory of tonal music which postulates nested, recursive dependency relationships that are modeled in analogy to linguistic syntax. However, numerous features of generative principles remain underspecified in their theory, which makes it difficult to implement the theory computationally or to derive cognitive predictions. This issue is addressed by a novel approach to describe musical syntax, which specifies an exact, general set of rules and casts empirical predictions (Rohrmeier, 2011). The approach aims to bridge insights from music theory, cognition and computation. In this presentation I will present the theory and compare some of its predictions with recent empirical evidence and work in progress.

Host: Prof. Wulfram Gerstner