

**Visiting speaker**

# **Federico De Martino**

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## **Imaging the human auditory pathway at high fields: computational models and high-resolution functional and anatomical characteristics.**

I will detail a series of high field (7 Tesla and above) MRI experiments examining functional and anatomical properties of the human auditory pathway (sub-cortical and cortical). Functional characteristics will be described on the basis of computational models of sound processing. Pushing the limits of spatial resolution, I will present our most recent data highlighting the presence of a columnar cortical organisation, the relevance of layer dependent processing in extracting relevant sound properties, the modulation of cortical layers with task demands, and the ability of high resolution fMRI to reveal a topographic representation of acoustic properties also in small sub-cortical structures. Together with functional studies, I will also present investigations of cortical myelination and preliminary results on high-resolution diffusion weighted imaging and resting state fMRI data. These results represent an effort to characterise the human auditory pathway at high spatial resolution and exemplify the relevance of high field (high-resolution) studies in linking in-vivo measurements of brain activity with computational models of sound processing.

**Date: Friday, September 22<sup>nd</sup> 2017**

**Time: 2:00 pm**

**Location: Fisher conference room,  
Robarts Research Institute**