



**Workshop EPFL-Inria  
15 et 16 février 2018, Paris**

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**Title:** « Mathematical modelling and numerical simulations applied to cardiac diffusion MRI »

**Abstract:**

In this talk I present briefly my PhD work which was devoted to the modelling and numerical simulation of the diffusion magnetic resonance imaging (MRI) signal in human heart using the Bloch-Torrey equation. The aim was to study numerically the influence of cardiac motion on diffusion MRI images and to focus on the issue of attenuation of cardiac motion effect that degrades the quality of the reconstructed images. The second part of this talk will be dedicated to the presentation of my collaborative postdoctoral research project which deals with more advanced numerical study of the cardiac diffusion MRI at microscopic scale and estimation of macroscopic parameters of the mathematical model using machine learning.