



DIDIER LUCOR

From France to Sweden



Project: **Uncertainty quantification for cardiovascular models**

Research topic: **Medecine & Health**

Swedish Institution: **KTH Royal Institute of Technology**

French Institution: **University Paris-Saclay**

Dates of mobility: **08/10/2017 to 12/10/2017**

Program: **SFVE-A (ex-TOR)**



PRESENTATION

[Didier Lucor](#) is a Senior Researcher at the French National Center for Scientific Research ([CNRS](#)) and the Interdisciplinary Laboratory of Numerical Sciences ([LISN](#), formerly known as LIMSI), based at the [University Paris-Saclay](#). He obtained his PhD in Applied Mathematics from [Brown University](#) in 2004, and was habilitated (HDR) from [Sorbonne University](#) (previously University Pierre et Marie Curie UPMC) in 2011. His interdisciplinary research combines fields in computational fluid mechanics (CFD) and applied mathematics, e.g., for predictive and stochastic modelling in the context of uncertainty quantification, but also for cardiovascular modelling and applications.

ACTIVITIES IN SWEDEN

During his mobility to Stockholm, Didier Lucor had regular discussions with his host at [KTH](#), [Prof. Johan Hoffman](#) from the [Division of Computational Science and Technology](#) at the [School of Electrical Engineering and Computer Science](#). He also communicated with [Prof. Matilda Larsson](#) and a number of PhD students, among others [Jeanette Spühler](#), [Frida Svelander](#), and David Larsson. The discussions focused on the application of techniques allowing to quantify numerical uncertainty in hemodynamic calculations, where Prof. Hoffman's team have developed cardiovascular prediction models. This is a difficult task, since the ventricle fills with blood during diastole via a mitral valve whose representation is too complex and uncertain to model realistically. The main task was thus to quantify the errors and evaluate their effects, and subsequently modify the modelling toward more accurate simulations, requiring time- and calculation-consuming collaborations that were initiated during the trip.