

# The 23rd International Conference on Domain Decomposition Methods

Yinoussa ADAGOLODJO\*

Department of Mathematics, Strasbourg University / ICube - UMR CNRS(France)  
7357  
adagolodjo@unistra.fr

Dr. Hadrien COURTECUISSÉ\*

Research Scientist at ICube - UMR CNRS(France) 7357  
hcourtecuisse@unistra.fr

Pr. Michel De Mathelin

Director of ICube, Strasbourg University / ICube - UMR CNRS(France) 7357  
demathelin@unistra.fr

Pr. Stéphane Bordas

Professor at Kirchberg Campus, Luxembourg University  
stephane.bordas@uni.lu

## Abstract

Our goal is to develop robotized needle insertion for drug delivery in small animals. We control the robot with a real-time Finite Element simulation that provides accurate models of the deformable environment. To predict the deformations we need to solve a contact problem which is known to be time consuming. To reduce the computational time we use the domain decomposition method: the FE mesh is split in several domains in order to extract parallelism for GPU computing and to concentrate the computation time around the needle.

\*Speaker