Contribution ID: **215** Type: **Oral Presentation**

Patch dynamics for fluid flow through long narrow tubes

Monday, 9 July 2018 11:30 (30 minutes)

Patch dynamics is a numerical multiscale solver which constructs a macroscale solution of a microscale system by solving the original microscale problem, but only within discrete patches. These patches are spread across the domain of the system and are separated by the desired macroscale spacing, thus providing a description of the system at the macroscale. The space between the patches is unsimulated, which reduces the size of the problem and permits a reduction in computational time. For the patches to accurately capture the macroscale behaviour of the system, the patches must be coupled across the unsimulated space. In developing patch dynamics, one of the main tasks is to ensure the patch coupling is both accurate and efficient. We consider the example of the flow of fluid, such as blood, through a long narrow tube with fixed obstructions. We show how to apply patch dynamics to obtain an accurate description of the fluid flow over long space and time scales.

Primary author: Dr BUNDER, Judy (University of Adelaide)

Co-author: Prof. ROBERTS, Tony (University of Adelaide)

Presenter: Dr BUNDER, Judy (University of Adelaide)

Session Classification: Multiscale modelling and simulation

Track Classification: Minisymposium: Multiscale modelling and simulation