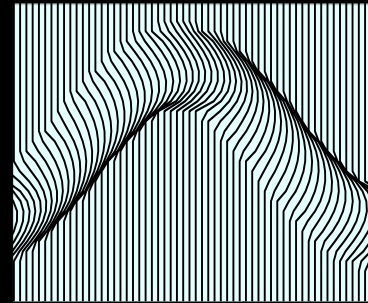
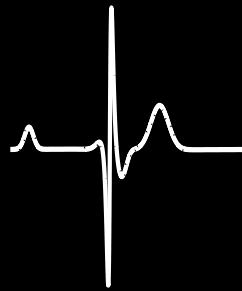
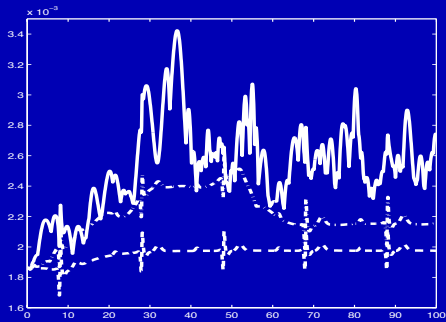
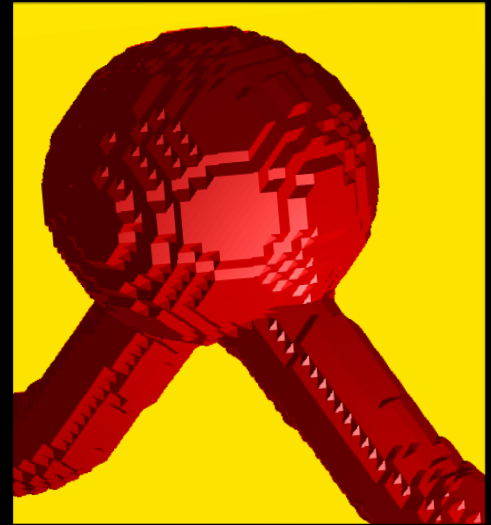


Immersed Boundary Method for Pulsatile Flow in Cerebral Aneurysms

Julia Mikhal
Bernard Geurts



Incompressible Navier-Stokes

$$\nabla \cdot \mathbf{u} = 0$$

$$\frac{\partial \mathbf{u}}{\partial t} + \mathbf{u} \cdot \nabla \mathbf{u} = -\nabla p + \frac{1}{Re} \nabla^2 \mathbf{u} + \mathbf{f}$$

Volume penalization

$$\mathbf{f} = -\frac{1}{\varepsilon} H(\mathbf{x}) \mathbf{u} \quad \varepsilon \ll 1$$

Masking Function in $\Omega = \Omega_s \cup \Omega_f$

$$H(\mathbf{x}) = 1 \quad \mathbf{x} \in \Omega_s$$

$$= 0 \quad \mathbf{x} \in \Omega_f$$

Property $\mathbf{u} \approx 0$ if $H(\mathbf{x}) = 1$

Skew-symmetric discretization

