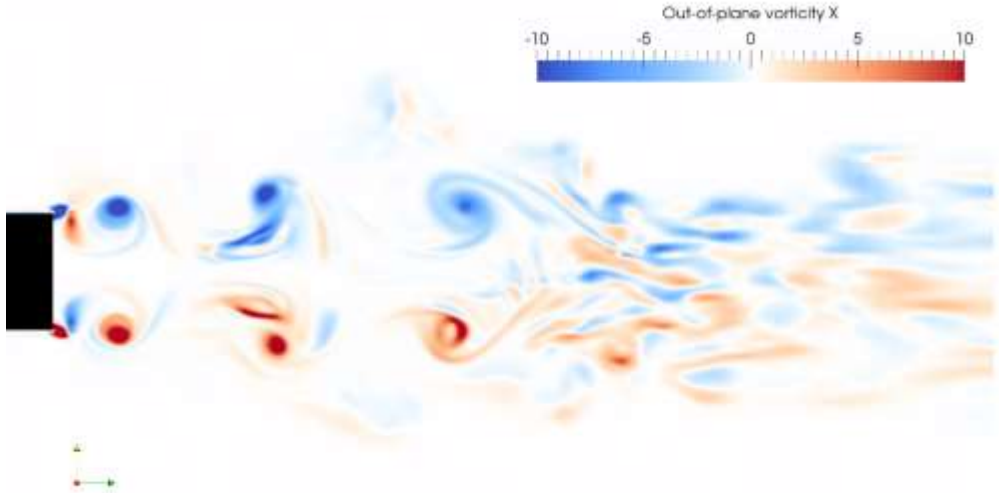
Periodically generated Vortex Rings

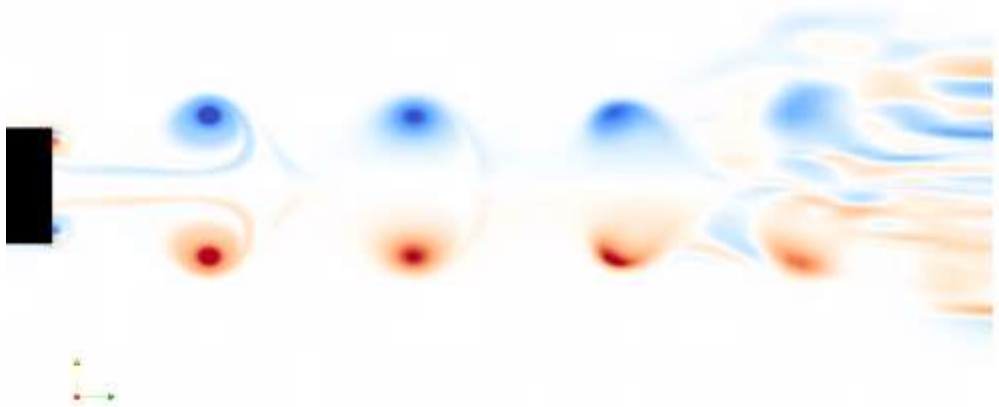
- **Equations:** 3D, unsteady , incompressible Navier-Stokes equations using curvilinear immersed boundary method
- **Implicit Momentum Solver:** Newton-Krylov method with approximate analytical Diagonal Jacobian
- **Poisson solver:** FGMRES with Multigrid preconditioner
- **Computational Grid Size**: Around 22 million grid points (225*225*433)
- **Required Computational Resources:** Approximately 160 cores for 100 hours to reach quasi-steady state depending on different test cases

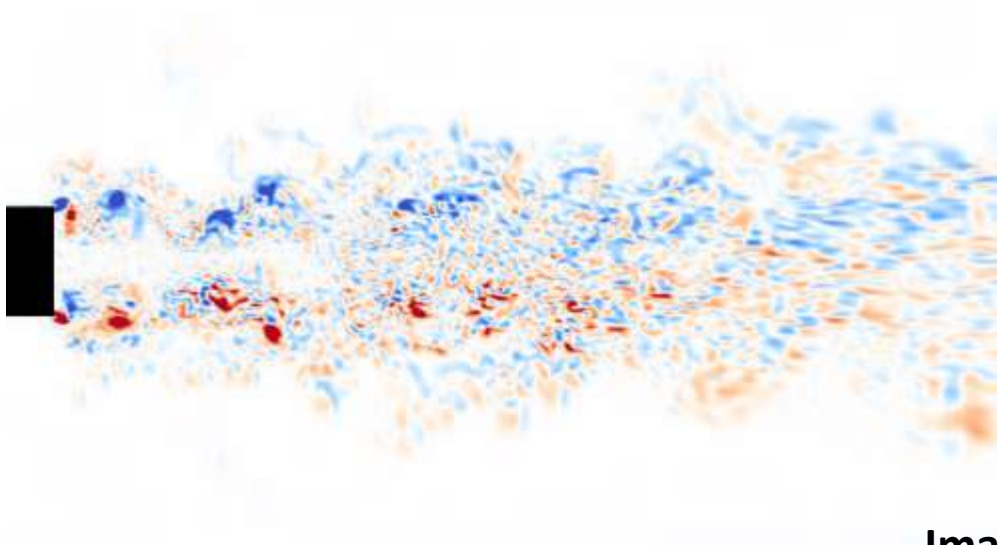
MECHANICAL ENGINEERING
TEXAS A&M UNIVERSITY

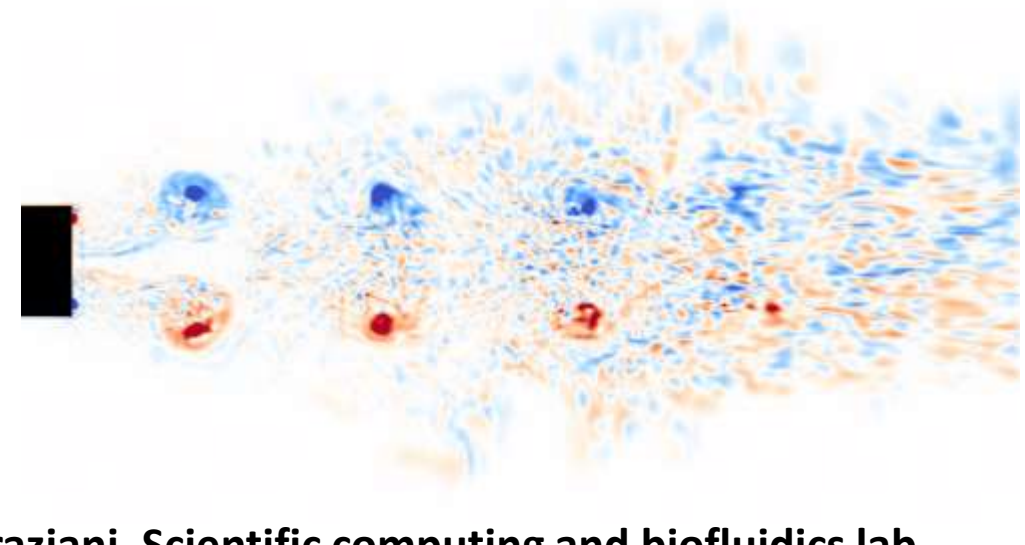
Iman Borazjani
Scientific computing and biofluidics lab

Quasi-steady State Vortex Ring Interaction Patterns









Vortex Ring Dynamics