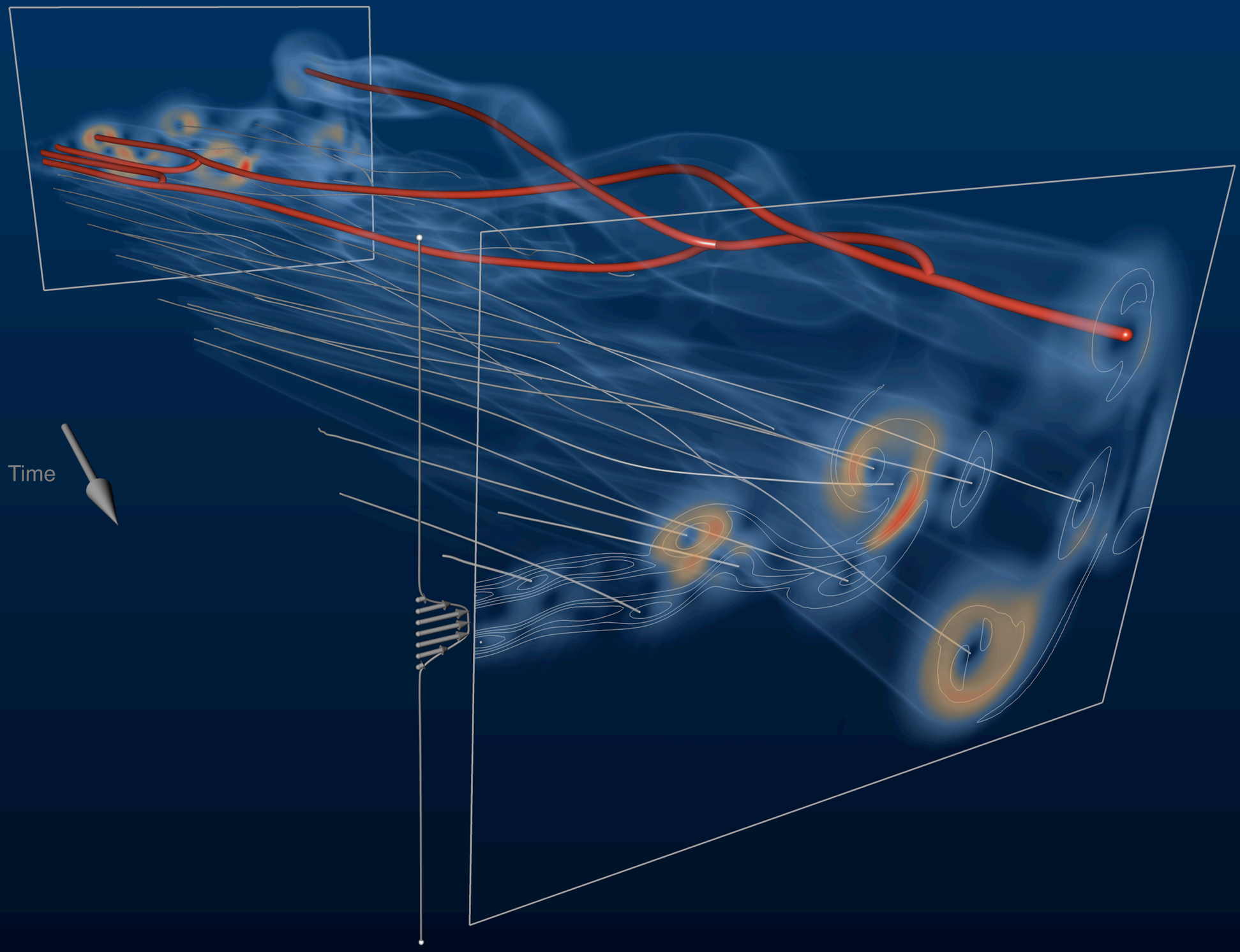

Incompressible Jet — Temporal Evolution of the Vortex Skeleton

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A viscous two-dimensional jet flow is visualized employing a direct numerical simulation at Reynolds number 500 and Ma=0.1. The flow direction is from left to right. The time is represented by the third dimension pointing towards the viewer. Our focus is the extraction of the vortex skeleton including vortex mergers in time. The evolution of the vortex skeleton is depicted by gray lines. A successive merger of three vortices is emphasized by the thick red curves. The vortex cores are identified by local minima of the material acceleration magnitude and positive Q-values (Kasten et al. 2011 TopoInVis). Regions of significant particle acceleration are indicated by the blue smoke. In the front plane, this acceleraton magnitude is color-coded, red regions denoting higher values than blue ones. In addition, vorticity iso-levels are added, demonstrating that vorticity maxima and acceleration minima effectively coincide.