***MOVIE CAPTIONS-JFM-20-S-0024-R1***

**Movie 1** It shows the dispersion of floating *infinitesimal* planktons via the feeding current (Eulerian velocity field) that is created by the *Aurelia aurita* while swimming forward for five cycles. Note that the Lagrangian particles (planktons) are consistently dragged from front part and adjacent areas to the bell margin, and also to the near-wake. The motion of 4.9106 Lagrangian particles/planktons is tracked in the coupled dynamical system based simulation. The dominant direction and magnitude of instantaneous plankton velocity are revealed by red color vectors. =12, *Re*=100, *h0/d0*=0.3.

**Movie 2** This movie shows the created symmetry plane (Eulerian) velocity field and starting and stopping vortices due to the paddling motion of *Aurelia aurita* for five cycles. =12, *Re*=100, *h0/d0*=0.3.

**Movie 3** It shows the entrainment of ‘*infinitesimal*’ Lagrangian prey particles that are initially placed inside (green color) as well as outside (blue color) the forward time FTLE loops (*pLCS*). The FTLE loops [same as in Figure 9(*a1*)] are obtained for five swimming cycles (*t*=5*T*), and appear invariant in time. In addition, the Lagrangian red particles are placed along the boundary of the FTLE loops (*pLCS*). With such specified floating *infinitesimal* particles upstream, the jellyfish swims across for *t*=5*T*. As a result, the red particles that initially constitute the forward time FTLE loops (*pLCS*) are gradually dragged downstream, via the paddling jellyfish motion, together with green and blue particles. Note that, after five cycles (*t*=5*T*), the red particles are dragged and rearranged to constitute the corresponding backward time FTLE/*pLCS* [identical to Figure 9(*a2*)]. Moreover, all green particles are entrained inside the *capture boundary* that the periphery of the newly formed backward *pLCS* represents, whereas blue particles stay out. =12, *Re*=100, *h0/d0*=0.3.

**Movie 4** This movie shows the transformation of the forward time FTLE contours and *pLCS* to backward time FTLE contours/*pLCS*, following the paddling motion of the *Aurelia aurita* in five cycles. Here the forward time FTLE contour lines [same as in Figure 9(*a1*)], *i.e*., corresponding Eulerian points, are first transformed to mass-lessLagrangian points (particles) and then their motion was tracked for five cycles (*t*=5*T*) to create the movie. =12, *Re*=100, *h0/d0*=0.3.

**Movie 5** This movie shows the created symmetry plane (Eulerian) velocity field and starting and stopping vortices due to the paddling motion of a *prolate* type jellyfish (*h0/d0*=0.5) for five cycles. =5.4, *Re*=100.

**Movie 6** It shows the dispersion of floating *infinitesimal* planktons via the feeding current (Eulerian velocity field) that is created by a *prolate* type jellyfish (*h0/d0*=0.5) while paddling forward for five cycles. Note that, the Lagrangian particles (planktons) are consistently dragged from front part plus adjacent areas to the bell margin and also to near-wake. The motion of 4.9106 Lagrangian particles/planktons is tracked in the coupled dynamical system based simulation. The dominant direction and magnitude of instantaneous plankton velocity are denoted by red color vectors. =5.4, *Re*=100.

**Movie 7** It shows entrainment of ‘*infinitesimal*’ Lagrangian prey particles that are initially placed inside (green color) as well as outside (blue color) the forward time FTLE loops (*pLCS*). The FTLE loops [same as in Figure 19(*a1*)] are obtained for five swimming cycles (*t*=5*T*) of the *prolate* like jellyfish (*h0/d0*=0.5), and appear invariant in time. The Lagrangian red particles are placed along the boundary of FTLE loops (*pLCS*). With such specified floating *infinitesimal* particles upstream, the jellyfish swims across for *t*=5*T*. As a result, the red particles that initially constitute forward time FTLE loops (*PLCS*) are gradually dragged downstream via the paddling jellyfish motion, together with green and blue particles. Note that, after five cycles (*t*=5*T*) the red particles are dragged and rearranged to constitute the corresponding backward time FTLE/*pLCS* [identical to Figure 19(*a2*)]. Moreover, all green particles are entrained inside the *capture boundary* that the periphery of the newly formed backward *pLCS* represents, whereas blue particles stay out. =5.4, *Re*=100.