



An Oscillatory Current in the Cape Cod Bay

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In the spring months the Cape Cod Bay is a feeding area for the North Atlantic Right Whale, one of the most endangered species of whale. The food source for the whales are patches of plankton. In the Cape Cod Bay there is a tidal current that flows along a topographic step and reverses its direction with the tidal period. It is of great interest to know the stability of this current since this would have a strong influence on the formation of vortices and plankton patches. In this talk we will present an idealized model of the Cape Cod Bay that captures some of the essential features of the observations: the large amplitude topography and the tidal forcing. We compute time-periodic nonlinear solutions to this model and then study the stability of this basic state to determine what type of vortical motion is produced.