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Higher-order synchronization for a nudging algorithm for 2D Navier-Stokes with nodal observables.

The analytical study of a nudging algorithm in the infinite-dimensional setting of PDEs was initially carried out by Azouani, Olson, and Titi for the two-dimensional (2D) incompressible Navier-Stokes equations (NSE). In their seminal work, convergence of the approximating solution to the true solution was shown to take place at least in the topology of the Sobolev space H^1 . However, this does not include uniform convergence. This talk will discuss convergence in stronger topologies, including the uniform topology, of this nudging based algorithm for data assimilation in the context of the 2D NSE when observations are given as on nodal values of the velocity field. This is joint work with Animikh Biswas (University of Maryland-Baltimore County) and Ken Brown (Hunter College). (Received September 15, 2020)