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**Aseel Farhat** and **Evelyn M. Lunasin\*** (lunasin@usna.edu), United States Naval Academy, Annapolis, MD 21403, and **Edriss S. Titi**. *Data Assimilation algorithm for 3D Benard convection in porous media employing only temperature measurements.*

In this paper we propose a continuous data assimilation (downscaling) algorithm for the Bénard convection in porous medium using only coarse mesh measurements of the temperature field. In this algorithm, we incorporate the observables as a feedback (nudging) term in the evolution equation of the temperature. We show that under an appropriate choice of the nudging parameter and the size of the mesh, and under the assumption that the observed data is error free, the solution of the proposed algorithm approaches at an exponential rate asymptotically in time to the unique exact unknown reference solution of the original system, associated with the observed (finite dimensional projection of) temperature data. Moreover, in the case where the observational measurements are not error free, one can estimate the error between the solution of the algorithm and the exact reference solution of the system in terms of the error in the measurements.

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