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Analysis of a feedback-control data assimilation algorithm

The purpose of this talk is to present some analysis results concerning a feedback-control (nudging) approach for data assimilation that works for a general class of dissipative dynamical systems and observables. In particular, we first show how to treat the case of discrete in time measurements with systematic errors. Later, we show how to obtain an analytical estimate of the error committed when using a numerical approximation of the feedback-control equation given by the Postprocessing Galerking method. Most importantly, the error estimate obtained in this latter result is uniform in time, which reflects the global stability of the system. This talk is based on joint works with C. Foias and E. S. Titi.