Ab-initio Functional Decomposition of Kalman Filter: a feasibility analysis on Constrained Least Squares Problems

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The standard formulation of Kalman Filter (KF) becomes computationally intractable for solving large scale state space estimation problems as in ocean/weather forecasting due to matrix storage and inversion requirements. We introduce a numerical formulation of KF using Domain Decomposition approach partitioning ab-initio the whole KF computational method. We present its feasibility analysis using the constrained least square model underlying variational data assimilation problems.

Keywords: Data Assimilation, Kalman Filter, Domain Decompositi.