



On the ensemble Rauch-Tung-Striebel smoother and its equivalence to the ensemble Kalman smoother

Patrick Raanes (1,2)

(1) NERSC, Bergen, Norway (patrick.n.raanes@gmail.com), (2) Mathematical Institute, University of Oxford, UK

The Rauch-Tung-Striebel (RTS) smoother is a linear-Gaussian smoothing algorithm that is popular in the engineering community. This is a study of its ensemble formulation (EnRTS). An on-line expression is derived and discussed. In particular, it is used to show that the EnRTS is equivalent to the ensemble Kalman smoother (EnKS), even in the non-linear, non-Gaussian case. The theory is revisited under practical considerations and equability is illustrated by numerical experiments, even though equivalence is broken by inflation and localisation.