

**Caballero-Águila, R.; Hermoso-Carazo, A.; Linares-Pérez, J.**

**Extended and unscented filtering algorithms in nonlinear fractional order systems with uncertain observations.** (English) [\[Zbl 1253.62067\]](#)  
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Summary: This paper is concerned with the state estimation problem in nonlinear fractional order discrete state-space systems with uncertain observations, when the random interruptions in the observation process are modelled by independent Bernoulli random variables. Two filtering algorithms are proposed for this class of systems; the first one is a generalization of the extended fractional Kalman filter to the case of uncertain observations, and the second one is designed using, as in the unscented Kalman filter, the scaled unscented transformation, which provides approximations of the first and second-order statistics of a nonlinear transformation of a random vector.

**MSC:**

[62M20](#) Inference from stochastic processes and prediction  
[60G22](#) Fractional processes, including fractional Brownian motion  
[65C60](#) Computational problems in statistics (MSC2010)

Cited in **10** Documents

**Keywords:**

[extended Kalman filter](#); [unscented filter](#)

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