1145-65-3028   **Andrea Arnold*** (`anarnold@wpi.edu`). *Estimating Structured, Time-Varying Parameters via Nonlinear Filtering.*

Many applications in modern day science involve unknown system parameters that must be estimated using little to no prior information. A subset of these problems includes parameters that are known to vary with time but have no known evolution model. We show how nonlinear sequential Monte Carlo filtering techniques can be employed to estimate time-varying parameters, while naturally providing a measure of uncertainty in the estimation. In particular, we show how structural characteristics of the time-varying parameters can be exploited in the estimation. Results are demonstrated on several applications from the life sciences. (Received September 26, 2018)