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Stochastic state space modeling of thermo-mechanical fatigue

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Modeling fatigue induced degradation of a metal film requires a consistent mathematical description of the physically relevant damage driving forces. In this work, a state space model, based on Itó stochastic processes to account for intrinsic stochastic effects, is followed. Parameter identification and uncertainty quantification are based on the system's corresponding Fokker-Planck equation, where an adjoint approach as well as profile likelihoods are implemented and compared to MCMC results.

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