

# Vibration-based Monitoring of Concrete Catenary Poles using Bayesian Inference

This work presents a robust status monitoring approach for detecting damage in cantilever structures based on logistic functions. Also, a stochastic damage identification approach based on changes of Eigen frequencies is proposed. The proposed algorithms are verified using catenary poles of electrified railways track. The proposed damage features overcome the limitation of frequency-based damage identification methods available in the literature, which are valid to detect damage in structures to Level 1 only. Changes in Eigen frequencies of cantilever structures are enough to identify possible local damage at Level 3, i.e., to cover damage detection, localization, and quantification. The proposed algorithms identified the damage with relatively small errors, even at a high noise level.



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