Treatment of arbitrarily autocorrelated load functions in the scope of parameter identification

Abstract:

Ambient vibration tests are output-only tests based on the structural response recorded under natural excitation, such as wind or traffic loads. In contrast to forced vibration test, they do not require service interruption and expensive devices to excite the structure. To this aim, we combine the recently proposed H-fractional spectral moments representation of stationary processes with a modification of the Kalman filter to the scope of structural parameter identification. This paper shows that the method is particularly suited to dealing with long correlated loads, i.e. stochastic processes with inverse power-law correlation, where many existing methods are not applicable or insufficiently accurate.

Stichworte:

Spectral Factorization; Gaussian Stationary Noises; Fractional Spectral Moments; Extended Kalman Filter; Parameter identification; Ambient Vibration Tests

Zeitschriftentitel: Journal of Computer and Structures

Jahr: 2013
Monat: Sep
Heft / Issue: 126
Seiten: 29-40
Sprache: en