

Frequency Identification of Wiener-Hammerstein Systems

Authors : Brouri Adil, Giri Fouad

Abstract : The problem of identifying Wiener-Hammerstein systems is addressed in the presence of two linear subsystems of structure totally unknown. Presently, the nonlinear element is allowed to be noninvertible. The system identification problem is dealt by developing a two-stage frequency identification method such a set of points of the nonlinearity are estimated first. Then, the frequency gains of the two linear subsystems are determined at a number of frequencies. The method involves Fourier series decomposition and only requires periodic excitation signals. All involved estimators are shown to be consistent.

Keywords : Wiener-Hammerstein systems, Fourier series expansions, frequency identification, automation science

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