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# Stochastic Dynamics of Engineering Systems

**Kazimierz Sobczyk**

*IPPT PAN, Warsaw, Poland*

The main objective of this plenary lecture is to expose the most notable models and results of stochastic dynamics a huge branch of contemporary science investigating real physical/engineering systems in the presence of random excitations. The lecture will consist of two parts. First, the general nonlinear stochastic governing equations of a wide class of real engineering systems will be presented along with their possible interpretations and the associated applicatory problems and results; in particular, a methodology used for the reliability assessment of randomly excited mechanical/structural systems will be discussed. Afterwards, various qualitative phenomena generated (in nonlinear systems) by random noise will be expounded (e.g. explosions of the response, noise-induced phase transitions, stochastic resonances, bifurcations, etc.). In the end of the lecture some computational problems and new challenges will be indicated

View the extended summary