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GIS/ss

GASTVORTRAG

Prof. M. Vasta
University of Chieti-Pescara, Italien

Thema: Response statistics to Poisson and non-Poisson renewal processes

Zeit: Donnerstag, 11. Mai 2006, 16:00 Uhr c.t.

Ort: Baufakultät, Technikerstrasse 13, Hörsaal B619 (6. Stock)

Kurzfassung

State vector of a dynamic system under a Poisson train of impulses is a non-diffusive Markov process and its joint probability density function satisfies an integro-differential generalized Fokker-Planck-Kolmogorov equation which is also called Kolmogorov-Feller equation. Exact (Vasta, 1995) and approximate solutions techniques for this problem have been recently proposed (Vasta and Luongo, 2004).

If the train of impulses is driven by non-Poisson, for example renewal, counting processes, the state vector is not a Markov process. Non-Markov pulse problems can be converted into Markov ones by augmenting the state vector of the dynamic system by auxiliary variables driven by Poisson processes (Iwankiewicz 2005).

Based on the general integro-differential forward Chapman-Kolmogorov equation the set of equations governing the joint probability density-distribution function of the response state variables and of Markov states can be derived. One of these equations is integro-differential and all other equations are partial differential. These equations can be transformed to first-order partial differential equations and an approximate solution technique is presented by considering the evolution of the response during small time intervals. The method of characteristics is used to find the explicit solution to these equations (Iwankiewicz and Vasta, 2006).

Über den Vortragenden

1995: Ph. D. Structural Engineering, University of Palermo; 1996: Assistant Professor, University of Innsbruck, Innsbruck, Austria, 1997-1999 Researcher – EU Grant : Marie Curie Fellowship Association – University of Sussex, Brighton, England; 1999-2004: Assistant Professor, University of L'Aquila, L'Aquila, Italy; 2005-present Associate Professor, University of Chieti-Pescara, Pescara, Italy,

2001: Junior Research Price Stochastic Dynamics, IASSAR, 2001

2005: Junior Research Price Stochastic Dynamics, EASD, 2005

Gäste sind herzlich willkommen!