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**Kandethody M Ramachandran\*** (ram@usf.edu), Department of Mathematics and Statistics,  
University of South Florida, Tampa, FL 33620-5700. *Weak convergence methods for Ergodic  
stochastic differential games and a numerical method.*

Since the early development days, differential game theory has had a significant impact in such diverse disciplines as applied mathematics, economics, systems theory, engineering, operations, research, biology, ecology, environmental sciences, among others. Much of stochastic game theory is concerned with diffusion models. It is well known that such models are often only idealizations of the actual physical processes, which might be driven by a wide bandwidth process or be a discrete parameter system with correlated driving noises. Optimal strategies derived for the diffusion models would not be of much interest if they were not "nearly optimal" for the physical system which the diffusion approximates. In this presentation, we will show that the optimal strategies derived for the "limit" system are also good strategies for the system which is driven by wide bandwidth noise processes. Such results not only gives robustness statement on the game problem, but also substantially simplifies the computational aspects. , One such computational technique based on Markov chain approximation method will also be presented. (Received January 04, 2012)