Public Abstract
First Name:Dhiraj
Middle Name:Dilip
Last Name:Patil
Adviser's First Name:Chengshan
Adviser's Last Name:Xiao
Co-Adviser's First Name:
Co-Adviser's Last Name:
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Department:Electrical Engineering
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Title:**ON THE SIMULATIONS OF CORRELATED NAKAGAMI-M FADING CHANNELS USING SUM-OF-SINUSOIDS METHOD**

Signal Fading can drastically affect the performance of terrestrial communication systems. Fading caused by multipath propagation can degrade the bit-error-rate (BER) performance of a digital communication system resulting data loss or dropped calls in a cellular system. So it is essential to understand the nature of multipath fading phenomenon and how to anticipate when such phenomenon occurs in order to improve radio performance.
The Nakagami-m distribution has gained widespread application in the modeling of physical fading radio channels. The primary justification of the use of Nakagami-m fading model is its good fit to empirical fading data. It is versatile and through its parameter m, we can model signal fading conditions that range from severe to moderate, to light fading or no fading.
This research work discusses the generation of Nakagami-m fading samples from sum-of-sinusoids method in which Nakagami process is generated by taking square root of Gamma process. Gamma process itself can be realized using Gaussian processes. We have used Improved Jake's Model to characterize the low-pass Gaussian Processes. We also studied second order statistics e.g. ensemble autocorrelation of this simulator and essential properties like Level Crossing Rate and Average Fade Duration. It has been found that simulation and theoretical results have very good fit. Furthermore, we extended this methodology to n-branch vector Nakagami-m fading channel for diversity reception. We have found excellent agreement of the simulation results to its theoretical counterparts.