

# Performance Modeling and Evaluation of Millimeter-Wave Based WPANs

Tony Tsang\*

*\*Hong Kong Polytechnic University, Hong Kong.*

**ttsang@ieee.org**

**Abstract**—The large amount of unlicensed bandwidth available in the millimeter-wave has enabled very high data rate wireless applications. The IEEE 802.15 Task Group 3c has completed standardization efforts for multi-gigabit data rate communications on both the physical (PHY) and medium access control (MAC) layers. In this paper we use Performance Evaluation Process Algebra (PEPA) to evaluate a typical WPAN system's performance. The approach is more convenient, flexible, and lower cost than the former simulation method which needs develop special hardware and software tools. Moreover, we can easily analysis how changes in performance depend on changes in a particular modes by supplying ranges for parameter rate values.

**Index Terms**—WPAN, IEEE 802.15.3c, Performance Evaluation



**Tony Tsang** (M'2000) received the BEng degree in Electronics & Electrical Engineering with First Class Honours in U.K., in 1992. He received the Ph.D from the La Trobe University (Australia) in 2000. He was awarded the La Trobe University Post-graduation Scholarship in 1998. He is a Lecturer at the Hong Kong Polytechnic University. Prior to joining the Hong Kong Polytechnic University, Dr. Tsang earned several years of teaching and researching experience in the Department of Computer Science and Computer Engineering, La Trobe University. His research interests include mobile computing, networking, protocol engineering and formal methods. Dr. Tsang is a member of the ACM and the IEEE.