1056-60-471 **Ira Gerhardt*** (ira.gerhardt@manhattan.edu), Dept. of Mathematics and Computer Science, 4513 Manhattan College Parkway, Riverdale, NY 10471, and **Barry L. Nelson** (nelsonb@northwestern.edu). *Characterizing departure count moments from queueing nodes fed by nonstationary, non-Poisson arrival processes.*

Many real-world systems are modeled as networks of nonstationary queueing nodes in an effort to approximate time-dependent congestion measures such as the mean and variance of the queue length at each node. An important step in providing these approximations lies in properly characterizing the nonstationary traffic flow within the network; however, this may prove to be difficult, particularly when the external arrival processes feeding the network are non-Poisson. We provide techniques for calculating moments of the departure count for nodes whose arrival processes are nonstationary and non-Poisson; specifically, we derive a finite-system of differential equations that describe the instantaneous rate of change of the time-dependent moments of the departure counting process from each node in the network. We compare our numerical approximation to simulation models, and find our results satisfactory. (Received September 09, 2009)