*M^x/G/*1 Queue with Bernoulli Service Schedule under Both Classical and Constant Retrial policies

Madhu Jain^{1,*}, G.C. Sharma¹, and Sapna Chakrawarti²

¹Institute of Basic Science, Khandari, Agra-282002 (India)

²St. John's College, Agra-282002 (India)

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Abstract—Retrial queues have been widely used to model the problems in telephone switching systems, telecommunications networks, etc., wherein a job receiving incomplete service may seek service repeatedly, until served successfully. This paper deals with $M^{\chi}/G/1$ bulk retrial queue with Bernoulli service schedule. The server is being subjected to active breakdowns. The investigation is made by taking the concept of the impatient customers under both classical and constant retrial policy. Chapman-Kolmogrov equations are constructed by using supplementary variable technique and the queue size distribution by using the probability generating method has been obtained. We also analyze the stochastic decomposition property for retrial queue under consideration. Some performance characteristics and special cases are established.

Keywords— $M^{\chi}/G/1$, Retrial, Bernoulli feedback, Supplementary variable, Stochastic decomposition, Generating function, Queue size

^{*} Corresponding author's email: <u>madhujain@sancharnet.in</u>