

Meeting: 1003, Atlanta, Georgia, SS 12A, AMS-SIAM Special Session on Stochastic, Large-Scale, and Hybrid Systems, I

1003-60-139 **Kumer Pial Das*** (daskime@auburn.edu), 306 E Magnolia Ave, #229, Auburn, AL 36830. *Ruin Estimates Under Interest Force: A Martingale Approach*. Preliminary report.

Consider an insurance portfolio. Suppose the number of claims occurring in the portfolio in a time interval is a homogeneous Poisson process. The premium that the insurance company receives for this portfolio is paid continuously with a constant rate. The company also receives interest on its reserves with an interest force. It is assumed that the premiums received per unit time exceed the expected claim payments per unit time. The surplus of the insurance company at a given time is treated as a continuous-time stochastic process. Ruin is said to occur at the first instant the surplus becomes negative, if it ever happens. The purpose of this study is to show how a martingale technique can be used to derive results concerning the probabilities of ruin, given that ruin occurs. The present value of the surplus is proved to be a submartingale. The main consequences of the submartingale assumption are examined in a continuous time model. The down crossing inequality for martingales has been used to find an upper bound on the ruin probability. Using the martingale convergence theorem the exact value of this upper bound has been found. The joint distribution of surplus before and after ruin can also be studied. (Received October 03, 2004)