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University of South Dakota, Vermillion, SD 57069, and **Y. L. Lio, Nan Jiang** and **T. -R. Tsai**.  
*A Dynamic System Based on Weibull Distribution*. Preliminary report.

In this research, the Weibull distribution is proposed for the baseline lifetimes of components in a composite system. In this composite system, the failure of a component induces a higher load on the surviving components and increases component hazard rate via a power-trend process. The likelihood function based on the component lifetimes of the composite system is studied, and the likelihood equations are established. A testing procedure is proposed for examining the relationship between the hazard rate function and the number of failed components. Intensive simulations have been conducted to evaluate the performance of the proposed procedures. Key words: Generalized likelihood ratio test; Log-likelihood function; Sequential order statistics. (Received September 04, 2014)