Goodness-of-fit tests for recurrent event data

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Abstract: We consider a repairable system with n units. The ith unit is observed over a time period $[0, \tau_i]$, where τ_i is a right-censoring random variable. When a unit fails it is perfectly repaired. We propose a class of goodness-of-fit tests for the hypothesis that the hazard rate function belongs to a parametric family $\mathcal{C} = \{\lambda(\cdot; \theta | \theta \in \Theta\}$. The asymptotic properties of the test statistic are given. Finite sample properties are examined using computer simulation studies. A real data set is used to illustrate the proposed tests.