The concept of survival signature and its extension to multi-state systems

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The concept of survival signature which is closely related to the usual system signature has been recently found to be very useful. Both signature and survival signature are effective tools for quantification of reliability of binary coherent systems, and for comparison of performances of such systems. In this work, we extend the definition of survival signature from binary systems to multi-state systems with multi-state components. With such an extension, an expression for the survival function of the time spent by a multi-state system in a specific state or above is obtained. Potential applications of this expression are discussed with illustrative examples.

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