The tensor t-function: a definition for functions of third-order tensors

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A definition for functions of multidimensional arrays is presented. The definition is valid for third-order tensors in the tensor t-product formalism and is therefore referred to as the "tensor t-function." By making use of its connection to block circulant matrices, the tensor t-function is shown to have similar properties as matrix functions in a number of fundamental scenarios. To demonstrate the definition's potential in applications, the notion of network communicability is generalized to third-order tensors and computed for a small-scale example via block Krylov methods for matrix functions

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