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*Bi-Free Entropy with Respect to a Completely Positive Map*

Free entropy, as developed by Voiculescu in the 1990s, is an essential concept in free probability and is used to prove numerous results in operator algebras. The non-microstate version of free entropy, which is based on a conjugate variable system and a notion of free Fisher information, was generalized by Shlyakhtenko to incorporate a completely positive map. In this talk, we will examine this notion of free entropy with respect to a completely positive map, its applications, and its extension to the bi-free setting.