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Eventually Entanglement Breaking Maps

The set of Entanglement breaking maps is one of the central aspects in the study of quantum information science and also in the theory of completely positive maps. In this talk, I will present a certain class of linear maps on matrix algebras that have the property that they become entanglement breaking after composing finite or infinite number of times with themselves. These maps are called eventually entanglement breaking. This means that the Choi matrix of the iterated linear map becomes separable in the tensor product space. It turns out that the set of eventually entanglement breaking maps forms a rich class within the set of all completely positive maps. The motivation of this work is the "PPT-squared conjecture" made by M. Christandl that says every PPT channel, when composed with itself, becomes entanglement breaking. In this work, it is proved that every unital PPT-channel becomes entanglement breaking after finite number of iterations. This is a joint work with Sam Jaques and Vern Paulsen