JOHN WATROUS, University of Waterloo
Time-reversal for rank-one quantum strategy functions

The quantum strategy framework (also known as the quantum combs framework) is a useful tool for reasoning about interactions between entities that process and exchange quantum information over the course of multiple turns. We prove a time-reversal property of a class of linear functions, which corresponds in a natural way to the set of rank-one Hermitian operators on a certain space, that are defined for all quantum strategies with a given turn structure. This time-reversal property states that every value obtained by such a function on a valid quantum strategy is also obtained when the direction of time for the function is reversed (despite the fact that the strategies themselves are generally not time reversible). One application of this result is an alternative proof of a known relationship between the conditional min- and max-entropy of bipartite quantum states.

This talk is based on joint work with Yuan Su.