Contribution ID: **16** Type: **not specified**

MCQM Seminar: Nilanjana Datta

Wednesday, 8 November 2023 14:15 (1 hour)

Title: Universal proofs of entropic continuity bounds via majorization flow

Abstract: We employ majorization theory to obtain a powerful tool for deriving simple and universal proofs of continuity bounds for various entropies which are relevant in information theory. In obtaining this, we first state a more general result which may be of independent interest: a necessary and sufficient condition under which a state maximizes a concave, continuous, Gateaux-differentiable function in an epsilon-ball in trace distance. Examples of such a function include the von Neumann entropy, Renyi entropies, and the conditional entropy. In particular, by introducing a notion of majorization flow, we prove that the alpha-Rényi entropy is Lipschitz continuous, for alpha greater than 1, thus resolving an open problem and providing a substantial improvement over previously known bounds. This is joint work with Eric Hanson.