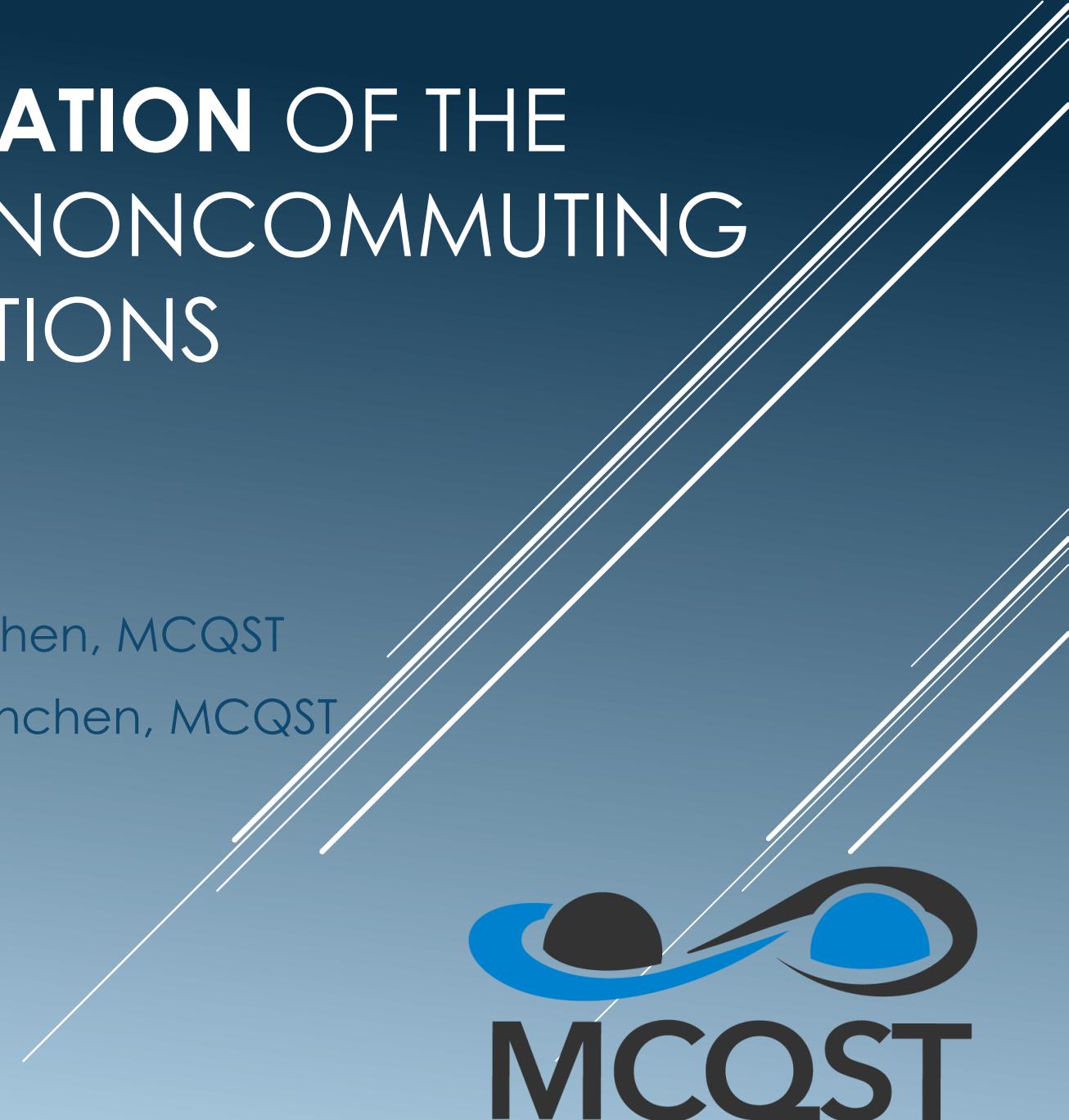


APPROXIMATE TENSORIZATION OF THE RELATIVE ENTROPY FOR NONCOMMUTING CONDITIONAL EXPECTATIONS

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STRONG SUBADDITIVITY OF VON NEUMANN ENTROPY

$$S(\rho_{ABC}) + S(\rho_B) \leq S(\rho_{AB}) + S(\rho_{BC})$$

[1]

APPROXIMATE TENSORIZATION OF THE RELATIVE ENTROPY

$$D(\rho || E_*^M(\rho)) \leq c \left(D(\rho || E_*^1(\rho)) + D(\rho || E_*^2(\rho)) \right) + d$$

[2]

MODIFIED LOGARITHMIC SOBOLEV INEQUALITY (MLSI)

$$4 D(\rho || \sigma) \leq -Tr[L_*(\rho)(\log \rho - \log \sigma)]$$

APPLICATIONS

RAPID MIXING

HYPOTHESIS TESTING

QUANTUM ANNEALERS

GIBBS STATE PREPARATION

[1] I. Bardet, Á. Capel and C. Rouzé, *Approximate tensorization of the relative entropy for noncommuting conditional expectations*, arXiv:2001.07981.

[2] Á. Capel, C. Rouzé and D. Stilck França, *The modified logarithmic Sobolev inequality for quantum spin systems: classical and commuting nearest neighbour interactions*, arXiv:2009.11817.