

Abstract Submitted
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Searching for the extreme values of the mutual information between two interacting subsystems ILYA GRIGORENKO, VINCENT CRESPI, Penn State University — We have considered two interacting subsystems represented by classical spins with a long-range interaction immersed in a thermal reservoir. We searched for maxima and minima of the mutual information between the subsystems by tuning the interaction parameters within only one subsystem: the parameters of the second subsystem - which can be thought of as an environment for the first one - and the interaction parameters between the first subsystem and the environment remain unchanged. We have identified the conditions leading to maximisation and minimisation of the mutual information between the subsystems, and their relation to a degeneracy of the energy spectrum that is spontaneously engineered by the optimisation procedure. We interpret the spatially inhomogeneous structure of the optimised subsystem in terms of information heterogeneity.

Ilya Grigorenko
Penn State University

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