

On Parallel Repetition of PCPs

Abstract

Parallel repetition has been widely used for interactive proofs (IPs) and multi-prover interactive proofs (MIPs). We initiate the systematic study of parallel repetition for probabilistically checkable proofs (PCPs).

We uncover a surprising result: canonical parallel repetition of a PCP increases soundness error and brings the limit of the soundness error to one. This failure turns out to be rather common and we characterize the cause for it. Finally we propose a simple variant of parallel repetition for PCPs that works as expected. Based on <https://eprint.iacr.org/2023/1714.pdf>, joint work with Alessandro Chiesa and Burcu Yildiz.

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