Finding extremal sets on the GPU

Fort, Marta

The extremal sets of a family $\mathcal{F}$ of sets consist of all sets of $\mathcal{F}$ that are maximal or minimal with respect to the partial order induced by the subset relation in $\mathcal{F}$. In this paper we present efficient parallel GPU-based algorithms, designed under CUDA architecture, for finding the extremal sets of a family $\mathcal{F}$ of sets. The complexity analysis of the presented algorithms together with experimental results showing the efficiency and scalability of the approach is provided.

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