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Burning Steiner Triple Systems

We introduce a round-based model much like graph burning which applies to hypergraphs. The rules for this new model are very natural, and generalize the original model of graph burning. A second model called “lazy burning” is also introduced, along with a new parameter, the lazy burning number. We mostly focus on applying these models to Steiner triple systems, as they have a special significance in the context of burning. We obtain a lower bound on the burning number and an upper bound on the lazy burning number of an STS. Some additional interesting results are shown, such as the fact that there are infinitely many STSs with lazy burning number 3. Finally, we consider a “doubling construction” for STSs, and use it to show that for every natural number n there is an STS with lazy burning number n .