SAMUEL MURRAY, McGill

Borel Fractional Perfect Matchings in Quasitransitive Amenable Graphs

A fractional perfect matching is the linear programming analog of a perfect matching, where we allow edges to take on values in the interval $[0, 1]$ instead of just $\{0, 1\}$. Descriptive fractional perfect matchings have recently become an object of interest in descriptive combinatorics, as results of Bowen, Sabok, and Kun have shown that the existence of nice measurable fractional perfect matchings implies the existence of measurable perfect matchings in hyperfinite bipartite locally finite graphings.

A compactness argument shows that any locally finite hyperfinite graphing that admits a perfect matching will admit a measurable fractional perfect matching. However, in an upcoming paper by Bernshteyn and Weilacher, they construct a polynomial growth Borel forest on a Polish space that has no Borel fractional perfect matching, even after throwing away an invariant meager set. In contrast to this result, we will show that if a Borel graph has components that are quasi-transitive and amenable, then if it admits a perfect matching it will admit a Borel fractional perfect matching.