Graph universality

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Abstract

Given a class $\mathcal{G}$ of n-vertex graphs, how can we construct a host graph H that contains them all as subgraphs? Graphs H with this property are called universal for $\mathcal{G}$, and the question gets interesting when we put certain restrictions on H. For example, we might be interested in a graph H with as few edges as possible, or a graph H which has only n vertices itself and still only few edges. Or we might ask when certain random graphs are universal for $\mathcal{G}$. This all leads to a variety of interesting and challenging problems. In the talk, I will explain what is known and what is open for some classes of graphs $\mathcal{G}$. I will also detail some techniques that I recently used with my co-authors Peter Allen and Anita Liebenau for progress when $\mathcal{G}$ consists of all D-degenerate graphs for a fixed D.

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