

- KATHERINE THOMPSON, *Factors affecting universality behaviour in graphs.*
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E-mail: katherine.thompson@tuwien.ac.at. A universal model for λ -graphs (graphs of size λ) is one which embeds all other λ -graphs. Under GCH the theory of graphs has a universal model in every uncountable cardinal, as do first-order definable restriction to smaller classes of graphs (such as triangle-free graphs). However, for nonelementary (not first-order definable) classes of graphs, it is often the case that under GCH there are no universal models. For instance $\lambda^{<\kappa} = \lambda$ for λ, κ regular implies that there is no universal λ -graph which omits κ -cliques. This line separating elementary versus nonelementary classes of graphs becomes blurred in models of set theory with the failure of the GCH. In this case several factors come into play to influence universality behaviour, such as various cardinal arithmetic assumptions, model-theoretic or combinatorial properties of the specific class of graphs (e.g. amalgamation properties) and model construction (forcing techniques). The distinctions in some cases can be independent of whether the class is elementary or not.