NON UNIVERSAL GRAPH WITH GORDINOWICZ PROPERTY

Gordinowicz, answering Bonato's question, constructed in his doctoral thesis a countable graph that resembles properties of the Rado graph, but is not isomorphic to it. The Gordinowicz graph $\mathbb{G}$ has the NN^c property, i.e. both the neighborhood of any vertex and its complement are isomorphic to $\mathbb{G}$. It turns out that $\mathbb{G}$ contains a copy of the Rado graph. Gordinowicz asked if there is a countable graph with the NN^c property without a copy of the Rado graph. We answer this question in the affirmative. More precisely, we construct a countable graph with NN^c-property which is not universal for finite graphs, i.e. not every finite graph is embedded in it.

The Gordinowicz construction was of the Ackermann–Rado type. Our construction uses the Fraisse theory developed by Kubiś in the setting of category theory. This is a joint work with Jarosław Swaczyna and Agnieszka Widz; still in progress.