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Removing induced even cycles from a graph

What is the minimum proportion of edges which must be added to or removed from a graph of density p to eliminate all induced cycles of length h? The maximum of this quantity over all graphs of density p is measured by the edit distance function, $\mathrm{ed}_{\mathrm{Forb}(C_h)}(p)$, a function which provides a natural metric between graphs and hereditary properties.

Martin and Peck determined $\mathrm{ed}_{\mathrm{Forb}(C_h)}(p)$ for all p for odd cycles, and for $p \geq 1/\lceil h/3 \rceil$ for even cycles. We improve on this result for even cycles by determining $\mathrm{ed}_{\mathrm{Forb}(C_h)}(p)$ for all $p \geq p_0$, where $p_0 \leq c/h^2$, for some constant c. More generally, if C_h^t is the t-th power of the cycle C_h, we determine $\mathrm{ed}_{\mathrm{Forb}(C_h^t)}(p)$ for all $p \geq p_0$ in the case when $(t+1) \mid h$, thus improving on earlier work of Berikkyzy, Martin, and Peck.

This is joint work with Richard Mycroft.