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*Parity thrackles on surfaces*

A graph drawn on a surface  $X$  is a *parity thrackle* if every pair of distinct edges properly cross an odd number of times. We show that every parity thrackle can be redrawn on  $X$  so that every pair of edges cross exactly once. This extends work by Cairns-Nikolayevsky (2009) where  $X$  is orientable, and relates to the Hanani-Tutte (1970) theorem regarding crossing numbers. This also leads to improved upper bounds on the edge density of classical a Conway (1969) thrackle. This is joint work with Yian Xu.