
BEN MOORE, Institute of Science and Technology Austria
Orientations of Highly Edge Connected Graphs

A nowhere zero 3 flow (henceforth: NZ3F) is an orientation of a graph such that, at each vertex, the indegree minus the outdegree is divisible by 3. Grotzsch's Theorem says that every triangle-free planar graph is 3-colourable. Tutte conjectured a wide-sweeping generalization: every 4-edge-connected graph admits a NZ3F. Lovasz, Thomassen, Wu and Zhang proved that 6-edge-connected graphs admit such a flow. We extend this result by showing that one can allow arbitrarily many 5-edge-cuts or 4-edge-cuts — under some technical conditions.

Our theorem generalizes the more technical version of the Lovasz, Thomassen, Wu, Zhang theorem.

This is joint work with Soffia Arnadottir, Evelyne Smith Roberge, Zdenek Dvorak, Bernard Lidicky, and Robert Samal.