

# Hamiltonicity of 1-planar graphs

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(joint work with Igor Fabrici, Jochen Harant, Tomáš Madaras,  
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A graph is 1-planar if it has a drawing in the plane such that each edge is crossed at most once by another edge. Moreover, if this drawing has the additional property that for each crossing of two edges the end vertices of these edges induce a complete subgraph, then the graph is locally maximal 1-planar. We investigate analogues of Whitney's Theorem and Tutte's Theorem on Hamiltonicity in 4-connected planar graphs. It is proven that 4-connected locally maximal 1-planar graphs are Hamiltonian and that there are 5-connected 1-planar graphs without Hamilton cycles.