4-connected polyhedra have at least a linear number of hamiltonian cycles

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Although polyhedra can have much fewer edges than triangulations, many results about hamiltonicity proven for triangulations also hold for polyhedra. The most famous of these results is surely Whitney's result from 1931 that 4-connected triangulations are hamiltonian, which was 25 years later generalised to 4-connected polyhedra by Tutte. For triangulations a lower bound of $|V|/(\log_2 |V|)$ was proven in 1979 and improved to a linear bound in 2018. Nevertheless the only known bounds for the number of hamiltonian cycles in 4-connected polyhedra are constant. In this talk we present the proof of a linear lower bound for 4-connected polyhedra.

This is joint work with Gunnar Brinkmann.

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