Andrew Wagner
University of Ottawa

Finding a second Hamilton cycle: the missing link

Abstract: A uniquely hamiltonian graph is one that admits exactly one Hamilton cycle. In 1946, Smith proved that there are no 3-regular uniquely hamiltonian graphs, which result was extended by Thomason in 1978 to all regular graphs of odd degree. A conjecture made by Sheehan in 1975 suggests that there are no 4-regular uniquely hamiltonian graphs. If the conjecture is true, it can be extended to all regular graphs of even degree, which will mean that there are no non-trivial uniquely hamiltonian regular graphs.

In this talk, we will explore the techniques used to achieve the best known results. We also give a sufficient condition for finding a second Hamilton cycle in 4-regular graphs with a large automorphism group.

This is a joint work with Mateja Šajna.