VCU Discrete Mathematics Seminar

On the number of hamiltonian cycles in triangulations with few separating triangles

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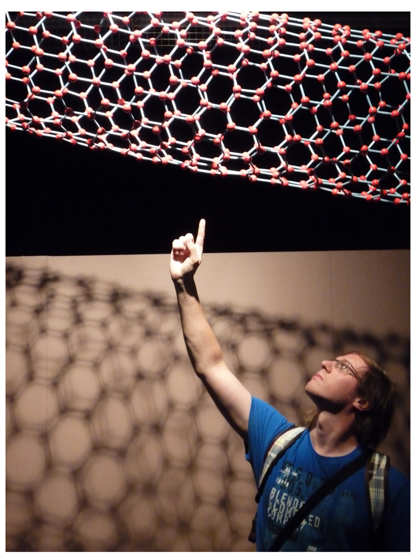
Tuesday, April 5
12:30–1:20
4145 Harris Hall

In 1979 Hakimi, Schmeichel and Thomassen proved that in a triangulation with n vertices and no "separating triangles" – that is: no cycle of length 3 such that there are vertices inside as well as outside of the cycle – there are at least $n/(\log_2 n)$ different hamiltonian cycles. We introduce a new abstract counting technique for hamiltonian cycles in general graphs. This technique is based on a set of subgraphs, their overlap with the hamiltonian cycles and a switching function. We improve the bound of Hakimi, Schmeichel and Thomassen to a linear bound and also show that in case of plane triangulations with one separating triangle there is still a linear number of hamiltonian cycles, and give computational results showing that their conjectured optimal value of $2n^2 - 12n + 16$ holds up to $n = 25$.
This is joint work with Gunnar Brinkmann, Jasper Souffriau and Annelies Cuvelier.



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