1158-57-156 **Kristóf Huszár*** (kristof.huszar@ist.ac.at), **Jonathan Spreer** and **Uli Wagner**.

Combinatorial width parameters for 3-manifolds.

Algorithms in computational 3-manifold topology typically take a triangulation as an input, and return topological information about the underlying 3-manifold. However, extracting the desired information from a triangulation (e.g., evaluating an invariant) is often computationally very expensive. In recent years this complexity barrier has been successfully tackled in some cases by importing ideas from the theory of parametrized algorithms into the realm of 3-manifolds. It was shown that various computationally hard problems about 3-manifolds can be efficiently solved for triangulations that are sufficiently "thin" or "tree-like."

In this talk we focus on the key combinatorial parameter in the above context, i.e., on the treewidth of a compact, connected 3-manifold. By building on the work of Scharlemann–Thompson and Scharlemann–Schultens–Saito on generalized Heegaard splittings, and on the work of Jaco–Rubinstein on layered triangulations, we relate the treewidth of a 3-manifold to classical invariants thereof. In particular, we show that the treewidth of a closed, orientable, irreducible, non-Haken manifold is always within a constant factor of its Heegaard genus. (Received February 28, 2020)