MATTHEW KAHLE, Ohio State University

Topological solid, liquid, and gas

We study the configuration space of n disks of unit diameter in a strip of width w. We are especially interested in the asymptotic topology as $n \to \infty$, in particular the growth of the Betti numbers.

We show that there are three distinct regimes: a solid regime where homology is trivial (except in degree 0), a liquid regime where homology is unstable and grows exponentially fast, and a gas regime where homology is stable and grows polynomially fast.

This is joint work with Bob MacPherson.