

CONFIGURATION SPACES OF HARD DISKS IN AN INFINITE STRIP

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We study the configuration space $C(n, w)$ of n non-overlapping unit-diameter disks in an infinite strip of width w . We present an asymptotic formula for the k th Betti number of $C(n, w)$, for fixed k and w as $n \rightarrow \infty$. We find that there is a striking phase transition: for $w > k$ the k th homology is stable and is isomorphic to the k th homology of the configuration space of points. But for $w \leq k$, the k th homology is wildly complicated, growing exponentially fast with n .

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