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## Dimension and rank of mapping class groups

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### **Abstract**

We will discuss recent work with Yair Minsky towards understanding the large scale geometry of the mapping class group. In particular, we'll explain how to obtain various topological properties of the asymptotic cone of the mapping class group including a computation of its dimension. An application of this analysis is an affirmative solution to Brock–Farb's Rank Conjecture which asserts that MCG has quasi-flats of dimension  $N$  if and only if it has a rank  $N$  free Abelian subgroup. Applications to the study of Teichmuller space will also be mentioned.