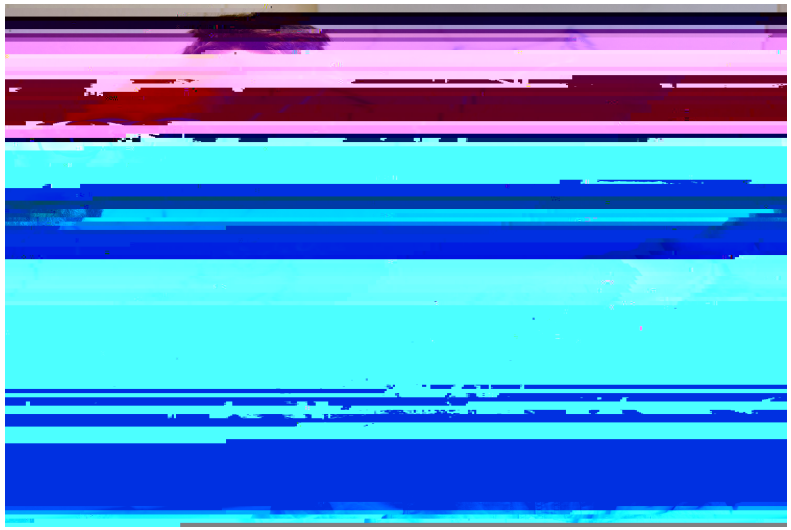

My name is Thomas Barthelme and I am an Associate Professor in the Department of Mathematics and Statistics at Queen's University.

My research interests lie in between geometric topology and dynamical systems, with a focus on problems mixing these domains. In particular, I like to try to understand how the dynamics of a system in uence the topology of the underlying space and vice versa. Here are some of the questions I am currently interested in.

Problem 1 *Writing an algorithm that produces a list of 3-manifolds supporting Anosov flows.* Anosov ows are a fundamental and central class of examples in smooth dynamical systems, but we still don't know much about which 3-manifolds can support them. Recent advances in the eld opens the possibility of exploring algorithmically these manifolds.

Problem 2 *Symmetries of (pseudo)-Anosov flows and partially hyperbolic diffeomorphisms.* Conjecturally all partially hyperbolic di eomorphisms in dimension 3 are related (semi-conjugated) to some symmetries of Anosov ows. This naturally leads to do questions: can one describe all the symmetries of a (pseudo)-Anosov ow, and, given such a symmetry, can one build a related partially hyperbolic di eomorphism?

Problem 3 *Centralizers of partially hyperbolic diffeomorphisms.* A classical question in dynamics is to understand the centralizer of a system, i.e., all the di eomorphisms that commute with a given dynamical system. In the case of certain partially hyperbolic di eomorphisms, Damjanovic, Wilkinson, and Xu proved a beautiful dichotomy: The centralizer is either (virtually) trivial, or (virtually) isomorphic to Z, in which case the di eomorphism is very speci c. The goal of this problem is to generalize this result to a much wider class of partially hyperbolic di eomorphisms in dimension 3.

If you nd any of these problems interesting or would like to hear more about my research, do not hesitate to contact me at thomas.barthelme@queensu.ca