1100-37-3   **Jean-Luc Thiffeault*** (`jeanluc@math.wisc.edu`), Department of Mathematics, University of Wisconsin, 480 Lincoln Dr, Madison, WI 53706. *pseudo-Anosovs with small or large dilatation.*

Homeomorphisms of a surface to itself can be classified using the well-known Thurston-Nielsen theorem. The most interesting topological class contains pseudo-Anosov mappings: they stabilize a pair of transverse singular foliations with a finite number of singularities. These foliations are called unstable and stable, and are respectively expanded and compressed by an algebraic constant called the dilatation. Characterizing the possible values of these dilatations for a given suface is an open problem. Here I discuss a method to find the minimum value of the dilatation on closed surfaces of a given genus, for the special case where the foliations are orientable. I will then address the opposite problem: how to find pseudo-Anosovs with large dilatations. Unlike the minimizer problem, this is not well-defined – the answer is infinity – unless we add a constraint. Constraints can arise from practical optimization problems in engineering, and I will show some optimal solutions that can be incorporated in devices called taffy pullers. (This is joint work with Erwan Lanneau and Matt Finn.) (Received February 10, 2014)