LIST OF RECOMMENDED PAPERS FOR PRESENTATION

This is a list of recommended papers for the presentation of MAT993V: Homéomorphismes pseudo-Anosov des surfaces (MAT993V: Pseudo-Anosov maps). The papers are very loosely grouped by topic, and we have included a brief description of each paper.

- Leininger 'On groups generated by two positive multi-twists: Teichmüller curves and Lehmer's number' [Lei04]
  This paper uses an idea of Thurston for constructing pseudo-Anosov maps to analyze the structure of subgroups of $\mathrm{Mod}(S)$ that are generated by two Dehn twists.

- Strenner 'Algebraic degrees of pseudo-Anosov stretch factors' [Str17]
  This paper studies the problem of which algebraic degrees are attained by dilatations of pseudo-Anosov maps defined on a fixed surface.

- Shin-Strenner 'Pseudo-Anosov mapping classes not arising from Penner's construction' [SS15]
  In [Pen88], Penner introduced a construction of pseudo-Anosov maps and conjectured that up to taking powers, every pseudo-Anosov map arises from this construction. This paper disproves this conjecture.

- Franks-Rykken 'Pseudo-Anosov homeomorphisms with quadratic expansion' [FR99]
  This paper shows that if a pseudo-Anosov map with orientable foliations has a quadratic dilatation, then it is the branched lift of an Anosov map on the torus. [LR20] shows that this fact does not generalize to higher algebraic degrees.

- Dowdall 'Dilatation versus self-intersection number for point-pushing pseudo-Anosov homeomorphisms' [Dow11]
  Given a closed path γ on a surface, one can define a point-pushing homeomorphism $\mathcal{P}(\gamma)$ by puncturing the surface at a point and pushing the puncture along γ. A theorem of Kra states that when γ is sufficiently complicated $\mathcal{P}(\gamma)$ is pseudo-Anosov. This paper analyzes the relation between the dilatation of $\mathcal{P}(\gamma)$ and the self-intersection number of γ.

- Farber-Reinoso-Wang 'Fixed-point-free pseudo-Anosov homeomorphisms, knot Floer homology and the cinquefoil' [FRW22]
  This paper classifies fixed-point free pseudo-Anosov maps with certain singularity types on the genus two closed orientable surface. The motivation of this comes from knot Floer homology.

- Delecroix-Ulcigrai 'Diagonal changes for surfaces in hyperelliptic components: a geometric natural extension of Ferenczi-Zamboni moves' [DU15]
  This paper develops a 'diagonal change' theory for hyperelliptic pseudo-Anosov maps which generalizes the description of $\mathrm{Mod}(T^2)$ on the Farey tessellation.

- Bestvina-Handel 'Train-tracks for surface homeomorphisms' [BH95]
  This paper describes a proof of Nielsen-Thurston classification using train tracks.
- Maher 'Random walks on the mapping class group' [Mah11]
  This paper shows that a random walk on the mapping class group leads to a pseudo-Anosov map with asymptotic probability one. Familiarity with geometric group theory is recommended for reading this paper.
- Hironaka-Kin 'A family of pseudo-Anosov braids with small dilatation' [HK06]
  This paper studies the minimum dilatation of pseudo-Anosov maps on punctured discs.
- Agol-Leininger-Margalit 'Pseudo-Anosov stretch factors and homology of mapping tori' [ALM16]
  This paper studies the minimum dilatation of pseudo-Anosov maps that preserves subspaces of H_1 of certain dimensions.
- Boissy-Lanneau 'Pseudo-Anosov homeomorphisms on translation surfaces in hyperelliptic components have large entropy' [BL12]
  This paper studies the minimum dilatation of hyperelliptic pseudo-Anosov maps.
- Gadre-Tsai 'Minimal pseudo-Anosov translation lengths on the complex of curves' [GT11]
  Aside from the Teichmüller space, $\mathrm{Mod}(S)$ also acts on other natural objects associated to S. One of these is the curve complex. This paper studies the analogy of the minimum dilatation problem in this setting.
- Sun 'A transcendental invariant of pseudo-Anosov maps' [Sun15]
  This paper constructs examples of fibered faces where the normalized dilatation function attains its minimum at a transcendental point.
- Landry-Minsky-Taylor 'A polynomial invariant for veering triangulations' [LMT20]
  This paper defines the taut polynomial for a general veering triangulation and shows that it generalizes the Teichmüller polynomial.
- Guéritaud 'On canonical triangulations of once-punctured torus bundles and two-bridge link complements' [Gué06]
  This paper demonstrates how to compute the hyperbolic volume of a once-punctured torus bundle from its veering triangulation. An appendix by Futer generalizes this to two-bridge link complements but the triangulations used there are not veering triangulations.
- Futer-Taylor-Worden 'Random veering triangulations are not geometric' [FTW20]
  This paper shows that for a generic pseudo-Anosov map, its associated layered veering triangulation is not geometric.
- Cannon-Thurston 'Group invariant Peano curves' [CT07]
  This is a classical paper that explains how to construct sphere-filling curves from pseudo-Anosov maps.

- Dowdall-Kapovich-Leininger 'Dynamics on free-by-cyclic groups' [DKL15]
  This paper generalizes Thurston-Fried fibered face theory to outer automorphisms of free groups.

- Landry-Minsky-Taylor 'Endperiodic maps via pseudo-Anosov flows' [LMT23]
  An endperiodic map is a type of homeomorphism defined on an infinite type surface that shares many similarities with pseudo-Anosov maps. This paper shows that it is possible to develop a theory of the former from knowledge of the latter. Some familiarity with 3-manifold topology is recommended for reading this paper.

- Zung 'Taut foliations, left-orders, and pseudo-Anosov mapping tori' [Zun20]
  This paper shows that positive Dehn fillings of the mapping torus of a pseudo-Anosov map with orientable foliations have left-orderable fundamental groups. The proof involves an analysis of the stable/unstable measured foliations. Some familiarity with 3-manifold topology is recommended for reading this paper.

References

[ALM16] Ian Agol, Christopher J. Leininger, and Dan Margalit. Pseudo-Anosov stretch factors and homology of mapping tori. *J. Lond. Math. Soc. (2)*, 93(3):664–682, 2016.

[BH95] M. Bestvina and M. Handel. Train-tracks for surface homeomorphisms. *Topology*, 34(1):109–140, 1995.

[BL12] Corentin Boissy and Erwan Lanneau. Pseudo-Anosov homeomorphisms on translation surfaces in hyperelliptic components have large entropy. *Geom. Funct. Anal.*, 22(1):74–106, 2012.

[CT07] James W. Cannon and William P. Thurston. Group invariant Peano curves. *Geom. Topol.*, 11:1315–1355, 2007.

[DKL15] Spencer Dowdall, Ilya Kapovich, and Christopher J. Leininger. Dynamics on free-by-cyclic groups. *Geom. Topol.*, 19(5):2801–2899, 2015.

[Dow11] Spencer Dowdall. Dilatation versus self-intersection number for point-pushing pseudo-Anosov homeomorphisms. *J. Topol.*, 4(4):942–984, 2011.

[DU15] Vincent Delecroix and Corinna Ulcigrai. Diagonal changes for surfaces in hyperelliptic components: a geometric natural extension of Ferenczi-Zamboni moves. *Geom. Dedicata*, 176:117–174, 2015.

[FR99] J. Franks and E. Rykken. Pseudo-Anosov homeomorphisms with quadratic expansion. *Proc. Amer. Math. Soc.*, 127(7):2183–2192, 1999.

[FRW22] Ethan Farber, Braeden Reinoso, and Luya Wang. Fixed point-free pseudo-anosovs and the cinquefoil, 2022.

[FTW20] David Futer, Samuel J. Taylor, and William Worden. Random veering triangulations are not geometric. *Groups Geom. Dyn.*, 14(3):1077–1126, 2020.

[GT11] Vaibhav Gadre and Chia-Yen Tsai. Minimal pseudo-Anosov translation lengths on the complex of curves. *Geom. Topol.*, 15(3):1297–1312, 2011.

[Gué06] François Guéritaud. On canonical triangulations of once-punctured torus bundles and two-bridge link complements. *Geom. Topol.*, 10:1239–1284, 2006. With an appendix by David Futer.

[HK06] Eriko Hironaka and Eiko Kin. A family of pseudo-Anosov braids with small dilatation. *Algebr. Geom. Topol.*, 6:699–738, 2006.

[Lei04] Christopher J. Leininger. On groups generated by two positive multi-twists: Teichmüller curves and Lehmer's number. *Geom. Topol.*, 8:1301–1359, 2004.

[LMT20] Michael Landry, Yair N. Minsky, and Samuel J. Taylor. A polynomial invariant for veering triangulations, 2020.

[LMT23] Michael P. Landry, Yair N. Minsky, and Samuel J. Taylor. Endperiodic maps via pseudo-Anosov flows, 2023.

[LR20] Christopher J. Leininger and Alan W. Reid. Pseudo-Anosov homeomorphisms not arising from branched covers. *Groups Geom. Dyn.*, 14(1):151–175, 2020.

[Mah11] Joseph Maher. Random walks on the mapping class group. *Duke Math. J.*, 156(3):429–468, 2011.

[Pen88] Robert C. Penner. A construction of pseudo-Anosov homeomorphisms. *Trans. Amer. Math. Soc.*, 310(1):179–197, 1988.

[SS15] Hyunshik Shin and Balázs Strenner. Pseudo-Anosov mapping classes not arising from Penner's construction. *Geom. Topol.*, 19(6):3645–3656, 2015.

[Str17] Balázs Strenner. Algebraic degrees of pseudo-Anosov stretch factors. *Geom. Funct. Anal.*, 27(6):1497–1539, 2017.

[Sun15] Hongbin Sun. A transcendental invariant of pseudo-Anosov maps. *J. Topol.*, 8(3):711–743, 2015.

[Zun20] Jonathan Zung. Taut foliations, left-orders, and pseudo-Anosov mapping tori, 2020.