VIPICS: **V**isualizing and **I**nteracting with **P**aths in **C**onfiguration **S**paces

Mathematics Computing Laboratory
Spring 2019 project

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Structure.

- There will be weekly meetings with assigned readings / problems / coding.
- You will recieve a letter grade based on your participation.

Checklist (non-math).

- how to use `git` and GitHub
- how to code in C#
- how to use Unity with the Oculus headset

Checklist (math). Undergraduate level understanding of sets and algebraic topology.

- Aguilar, Gitler, Prieto: Pages xvii-xx
- Hatcher: Pages xii, 5-6, 25-27
- Wikipedia: "simplicial complex"

Goals. Read through the project outline. We want to:

- achieve primary, secondary, tertiary goals, adjusting as necessary
- create poster describing the semester's work

Sources (current research).

- Carlsson (2009). *Topology and data.* (Sections 2.1, 2.3)
- Topaz, Ziegelmeier, Halverson (2015). *Topological Data Analysis of Biological Aggregation Models.*

Sources (mathematical background).

- Aguilar, Gitler, Prieto (2002). *Algebraic Topology from a Homotopical Viewpoint.*
- Hatcher (2015). *Algebraic Topology.*
- May (1999). *A Concise Course in Algebraic Topology.*