

**Spring 2021, Math 621: Preliminary Problem Set 8**  
**Due: Thursday, March 18th, 2021**  
**The Fundamental Theorem of Covering Spaces**

**Preliminary problems.** These should be submitted to Gradescope before Thursday discussion.

(P1) Find all covering spaces of  $\mathbb{RP}^3$ .

(P2) Locate an element that lies in the normal subgroup  $H = \langle a \rangle \subset F_2 = \langle a, b \rangle$  that is **not** in the (not necessarily normal) subgroup  $H' = \langle a \rangle \subset F_2$ .