Physical Mechanism: Curvature-Induced Velocity Reduction
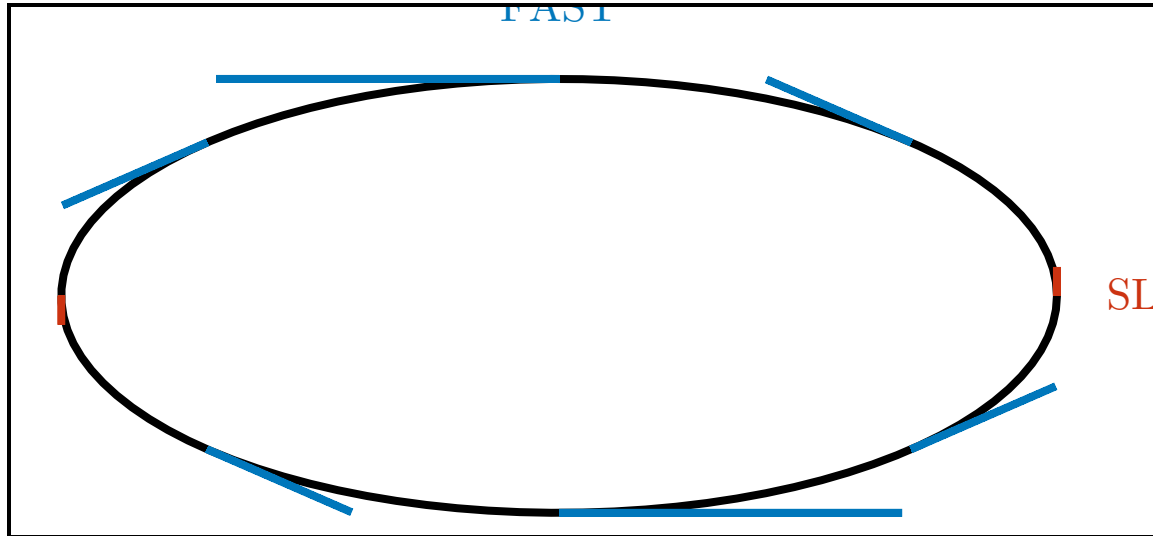
Velocity Profile on Ellipse

FAST

SL

Clustering Mechanism

1. High curvature κ

2. Particles slow down

3. More collisions locally

4. Particles get trapped

5. CLUSTER FORMS