The general idea is that flow-induced stresses deform the object, and the deformed object then interacts hydrodynamically with nearby boundaries, which in turn alters the object’s motion.

This paper used the mobility and resistance matrices to relate the particle’s translational velocity and rate of rotation to the forces and torques acting on it.

Euler's critical load or **Euler's buckling load** is the compressive load at which a slender column will suddenly bend or buckle.

The column will remain straight for loads less than the critical load. The *critical load* is the greatest load that will not cause lateral deflection (buckling). For loads greater than the critical load, the column will deflect laterally.

Lagrangian coordinate ς is the arclength along the beam's undeformed centreline.

As α increases, two distinct protrusions gradually approach each other until they meet at a bifurcation point, causing the curve to split and generate a new independent closed loop. Subsequently, as α continues to increase, this new independent closed loop moves away from the previously connected curve.