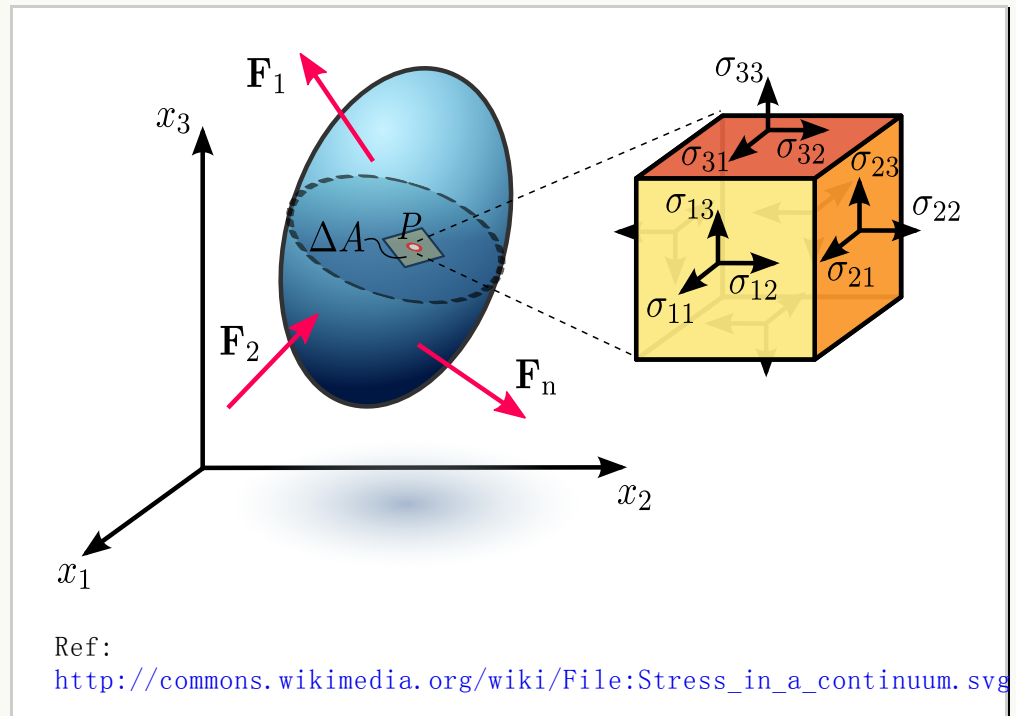




Topics

1. Stress
2. Strain



3. Principal Stresses & Strains
4. Hooke's Law

Summary

This chapter on introductory mechanics will review the basics of small strain linear elastic mechanics. All the complexities of finite deformations and rotations will be postponed until later. Nevertheless, this chapter is still relevant to structural analyses of aircraft, buildings, bridges, and most any other structure that operates in the small strain linear-elastic regime.

Small strain mechanics represent the 1st order linearization of finite deformation nonlinear mechanics. Of course, small strain mechanics cannot provide accurate quantitative predictions in nonlinear problems. But they can provide excellent qualitative insights and understanding of complex nonlinear processes.

The section begins with basic definitions of stress and strain, then moves to Hooke's Law and concludes with principal values. Keep in mind that all topics covered here are in the context of small strains, deformations, displacements, rotations, etc.

