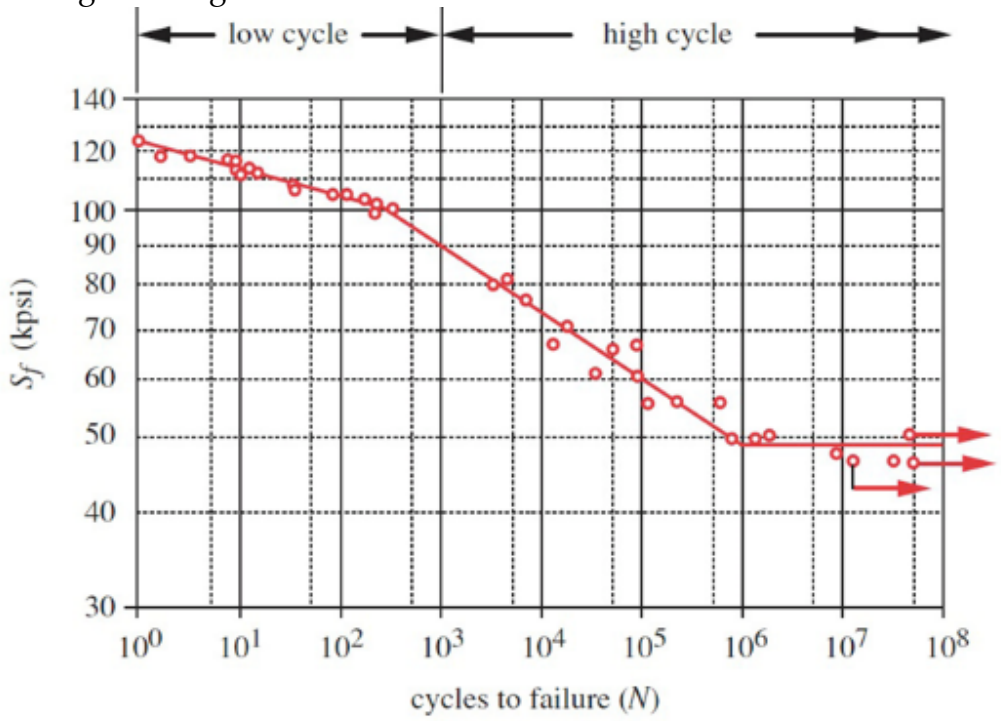
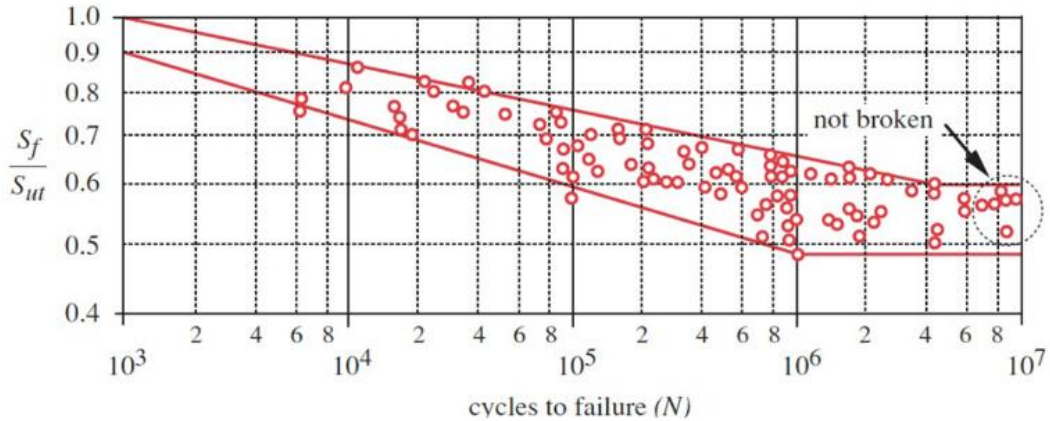
DME3051 Mechanical Design
Instructor: Prof. Keun Ryu (kryu@hanyang.ac.kr; http://turbolab.hanyang.ac.kr)
Important figures for Mid-term exam

- Low Cycle Fatigue vs High Cycle Fatigue
- Fatigue strength & Endurance limit

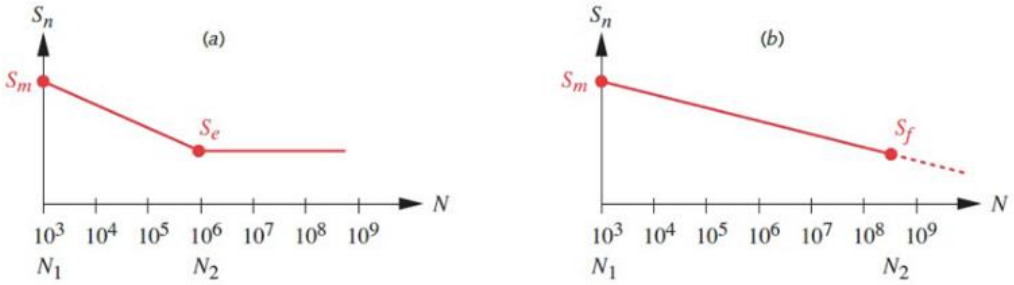


Fully Reversed Axial S-N Curve for AISI 4130 Steel, Showing Break at LCF/HCF Transition and an Endurance Limit

- Chap. 8.3
- R.R. Moore Rotating bearing test
- **MUST KNOW(**): Figs. 8.3, 8.4, 8.5, 8.9**

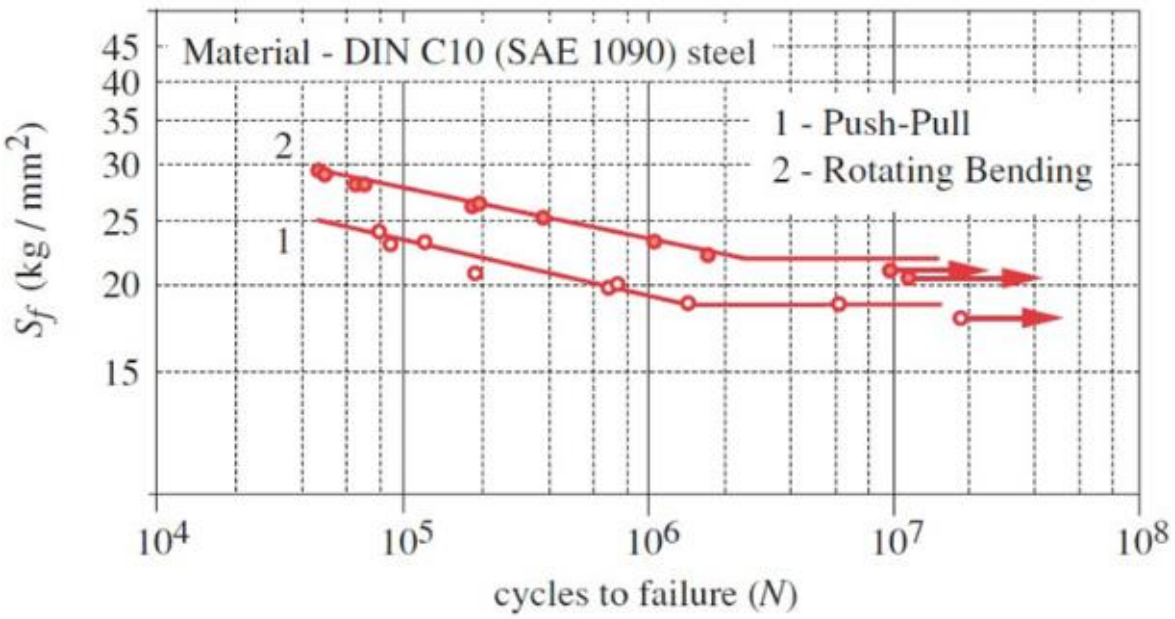


Log-Log Plot of Composite S-N Curves for Wrought Steels of $S_{ut} < 200$ ksi



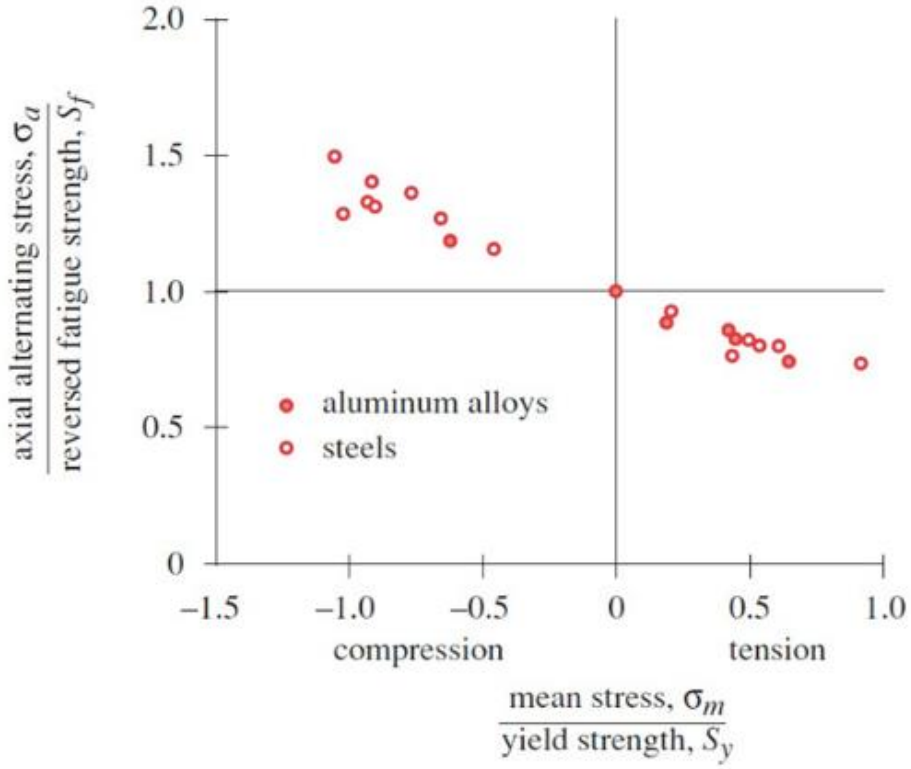
Estimated *S-N* Curves for (*a*) Materials with Knee, (*b*) Materials Without Knee

- Chap. 8.4
- **MUST KNOW: Fig. 8.11**
- Fully reversed bending vs Axial loading vs Torsional loading vs Rotating-beam

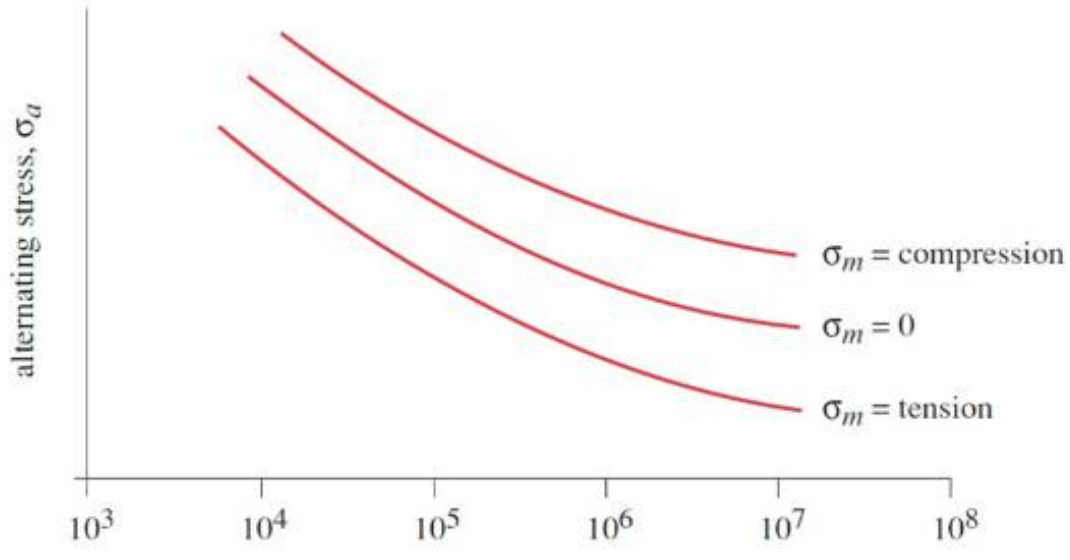


Fully Reversed Axial and Rotating-Beam *S-N* Curves Compared

- **Combined σ_m and σ_a**

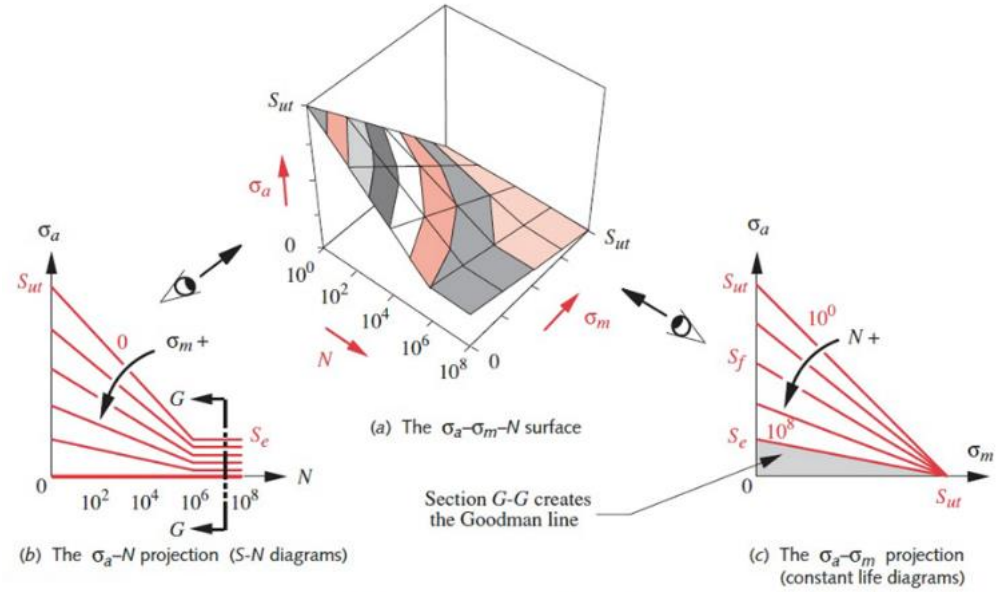


Compressive and Tensile Mean Stress Effect

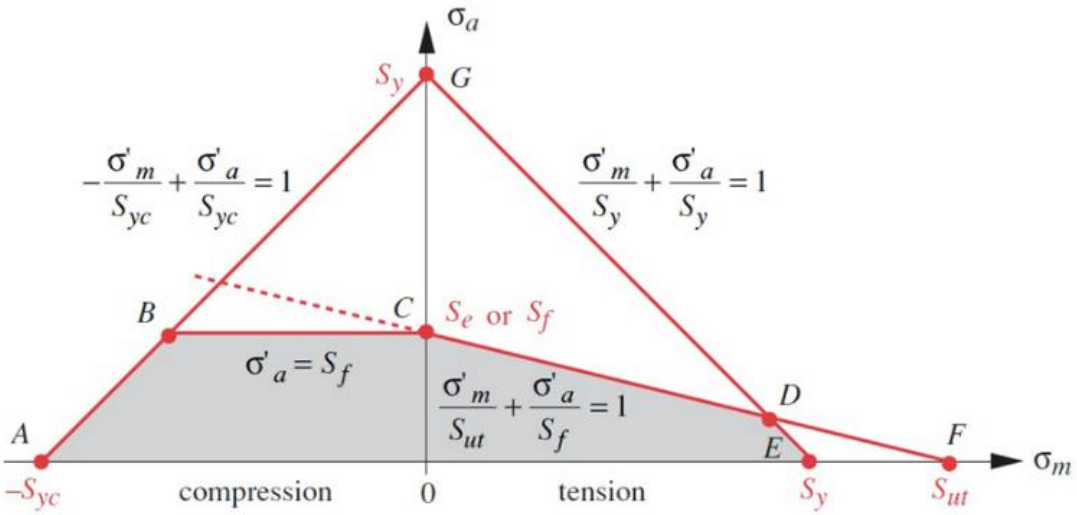


Effect of Mean Stress on Fatigue Life

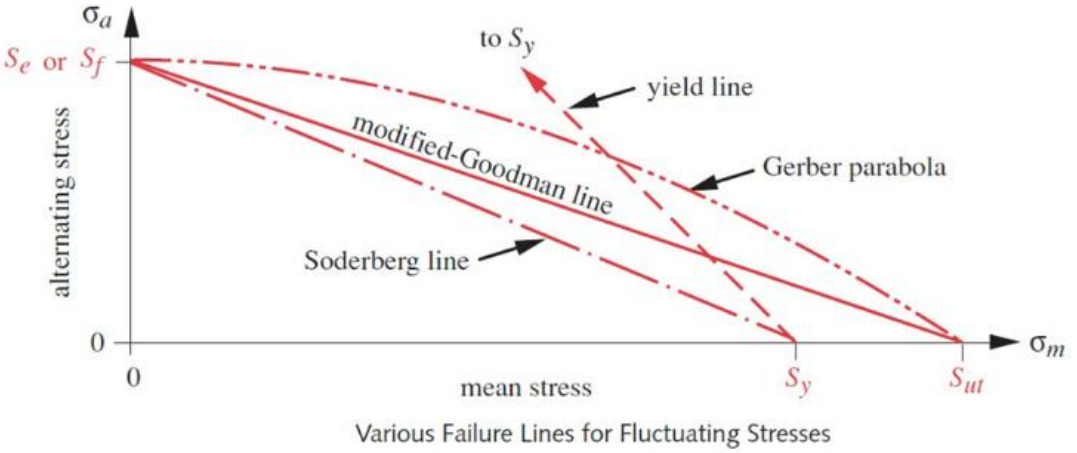
MUST KNOW(**): Table 8.2, Figs. 8.16, 8.20



Effect of a Combination of Mean and Alternating Stresses



An "Augmented" Modified-Goodman Diagram



Various Failure Lines for Fluctuating Stresses