

## Fatigue Strength Calculations

Material Properties

$$S_u := 97 \quad S_{np} := 0.5 \cdot S_u \quad S_{np} = 48.5$$

From Table 8.1:

$$C_L := .58 \quad C_G := 0.8 \quad C_S := 0.76$$

Endurance Limit:

$$S_n := S_{np} \cdot C_L \cdot C_G \cdot C_S \quad S_n = 17.103$$

$10^3$  Cycle Strength

$$S_{1000} := 0.72 \cdot S_u \quad S_{1000} = 69.84$$

Logarithmic Interpolation

$$\begin{aligned} N &:= 50000 & A &:= \log(S_{1000}) \\ S_N &:= 10^{\left[ A - \frac{1}{3} \cdot (A - \log(S_n)) \cdot (\log(N) - 3) \right]} & S_N &= 31.482 \end{aligned}$$