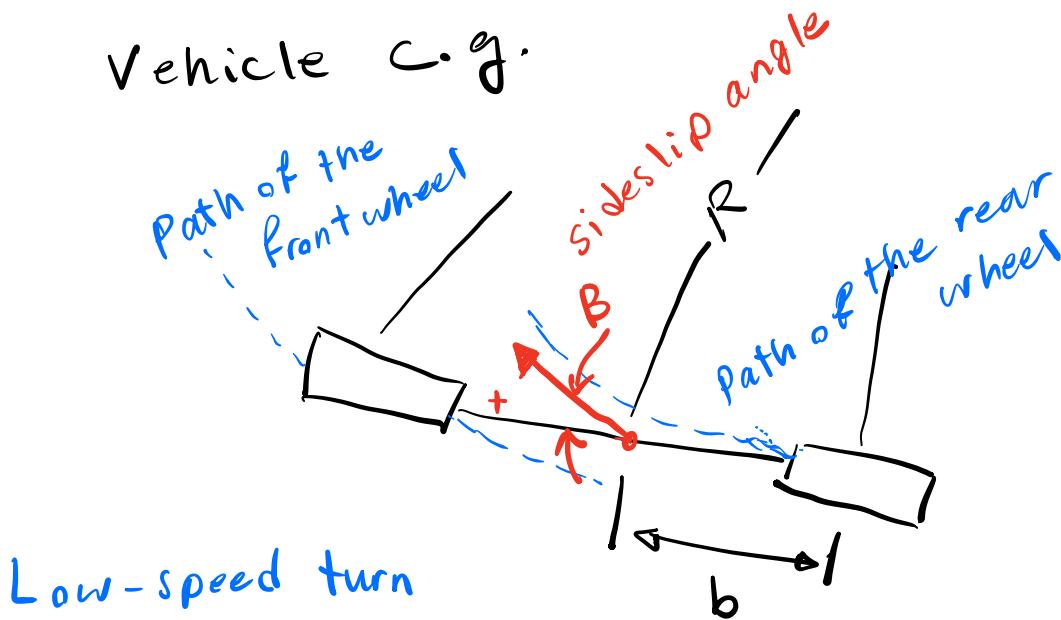


Module 10 - side slip Angle

At low speed (usually) the rear wheels track inside the front wheel.

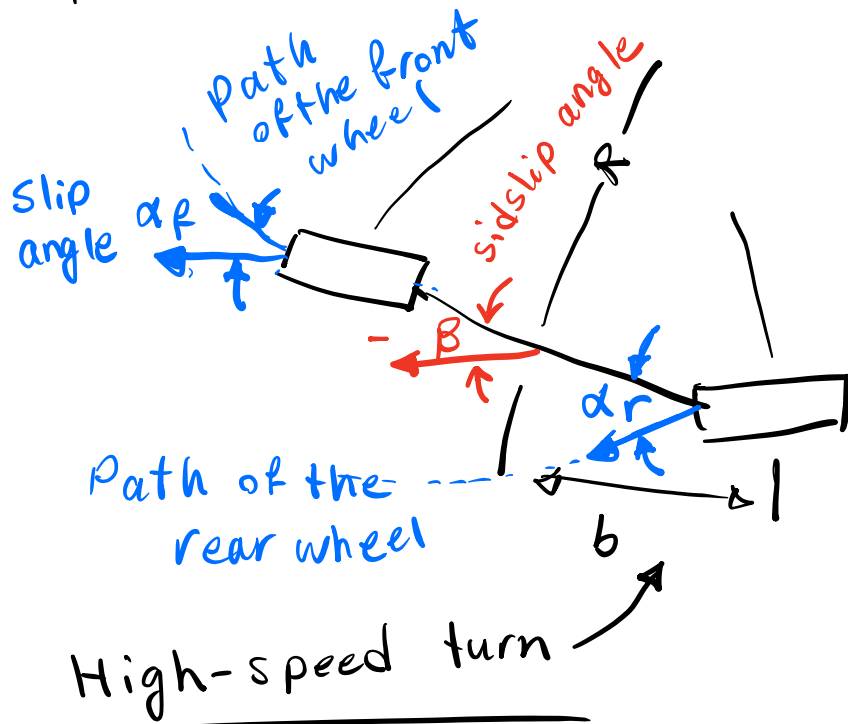
At high speed (usually) the rear wheels track outside the front wheel.

side slip angle: the angle between the longitudinal axis (centerline) and the instantaneous path of the vehicle c.g.



clockwise angles viewed from above are

positive in SAE convention.



side slip angle β $\left\{ \begin{array}{l} \text{low speed } \beta = 57.3 \frac{b}{R} \text{ deg.} \\ \text{High speed } \beta = 57.3 \frac{b}{R} - \alpha_r \text{ deg.} \end{array} \right.$

$$\alpha_r = \frac{W_r}{C_{\alpha r}} \frac{u^2}{gR} \Rightarrow \beta_{\text{High speed}} = 57.3 \frac{b}{R} - \frac{W_r}{C_{\alpha r}} \frac{u^2}{gR}$$

$$= \left(57.3 b - \frac{W_r}{C_{\alpha r} g} u^2 \right) \frac{1}{R}$$

Side slip angle becomes zero when:

$$u_{\beta=0} = \sqrt{57.3 C_{\alpha r} g b / W_r}$$