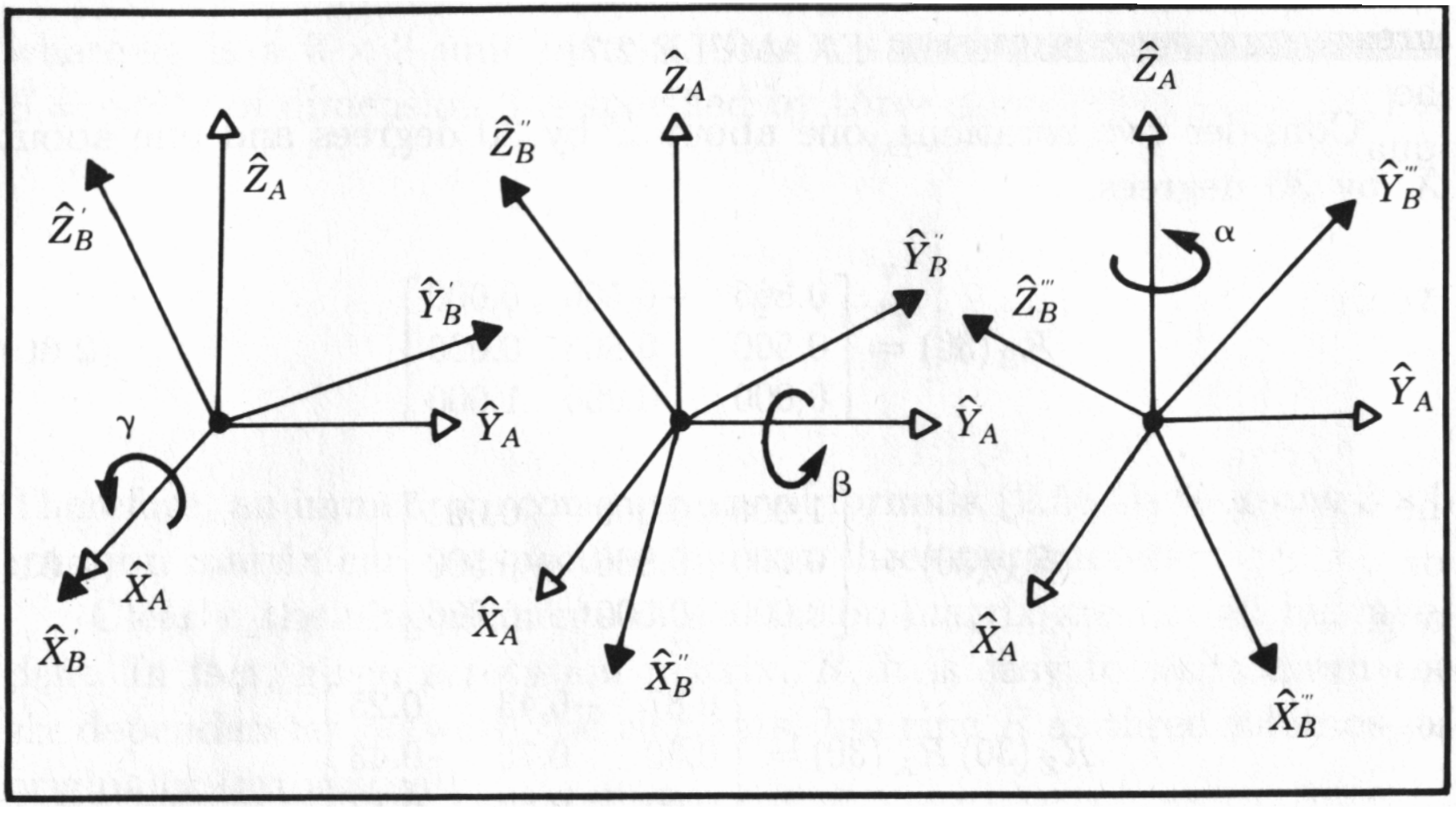
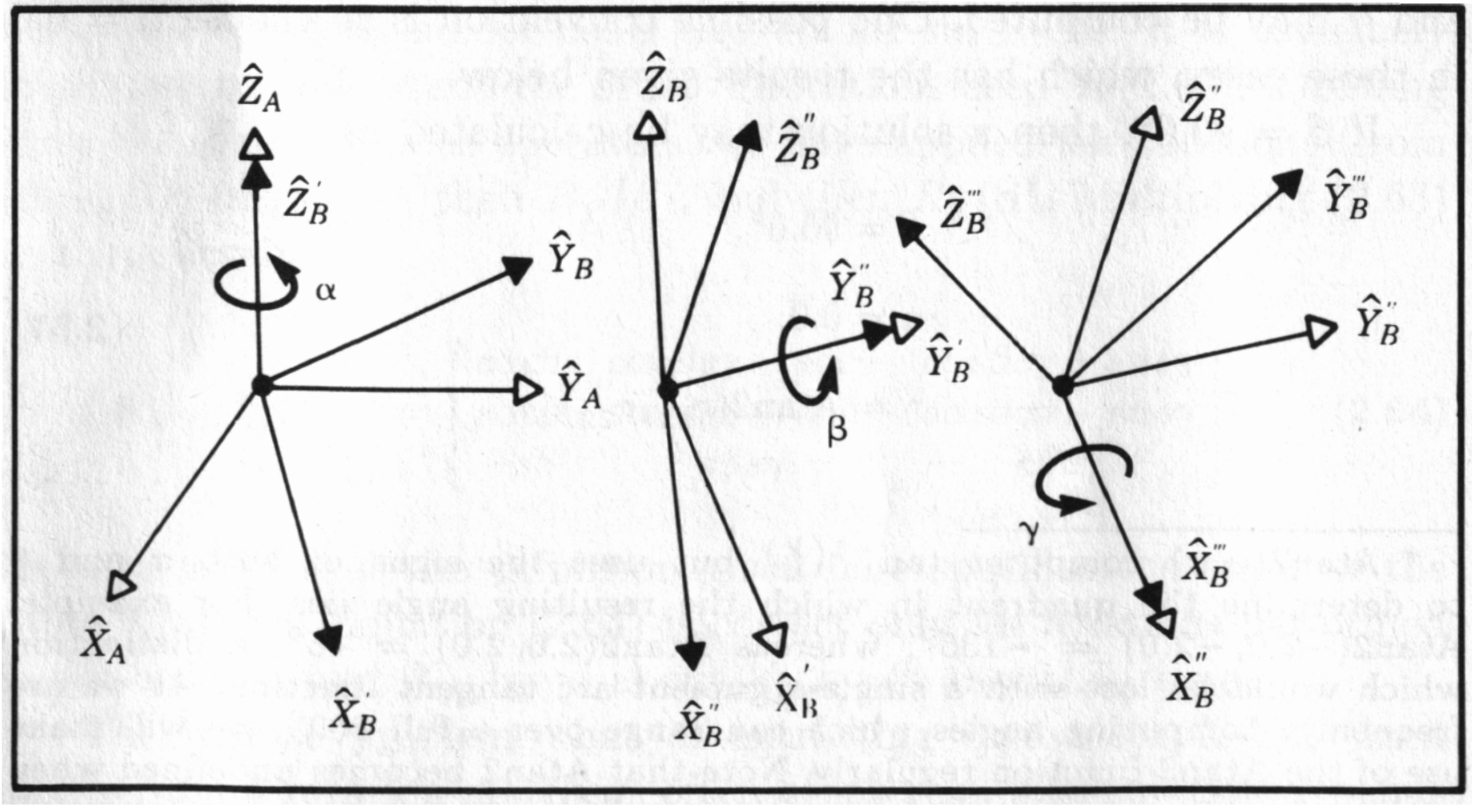
X-Y-Z fixed angle convention



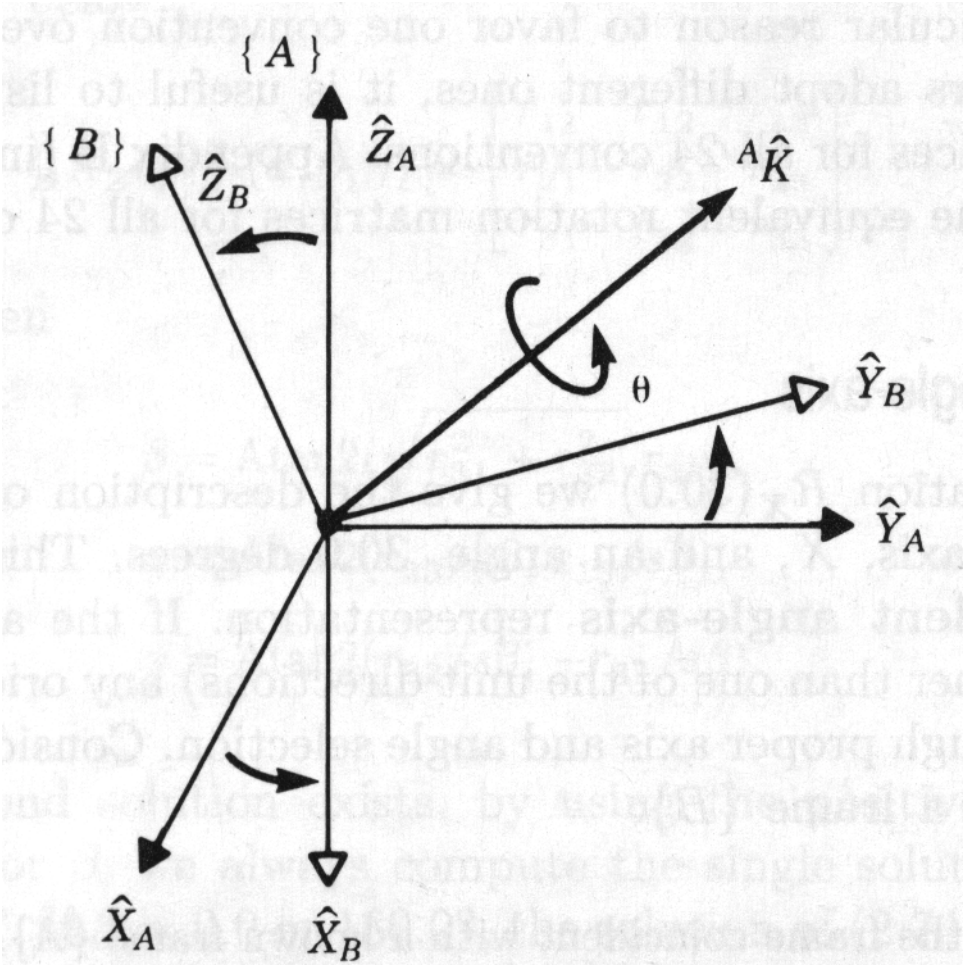
Start with the frame coincident with a known reference frame $\{A\}$. First rotate $\{B\}$ about $\hat{X}_A$ by an angle γ, then rotate about $\hat{Y}_A$ by an angle β, and then rotate about $\hat{Z}_A$ by an angle α.

Z-Y-X Euler angle convention



Start with the frame coincident with a known frame $\{A\}$. First rotate $\{B\}$ about $\hat{Z}_B$ by an angle α, then rotate about $\hat{Y}_B$ by an angle β, and then rotate about $\hat{X}_B$ by an angle γ.

Equivalent angle-axis convention



Start with the frame coincident with a known frame $\{A\}$. Then rotate $\{B\}$ about the vector ${}^A\hat{K}$ by an angle θ according to the right-hand rule.

Equivalent angle-axis matrix derivation