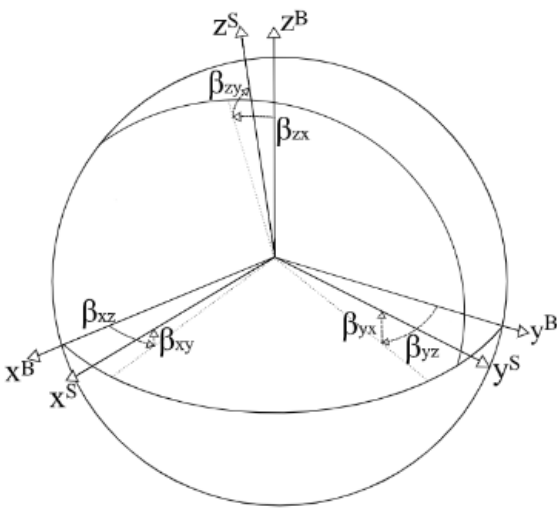


# 定位 IMU BSM 标定误差模型



$$\mathbf{a}^O = \mathbf{T}^a \mathbf{K}^a (\mathbf{a}^S + \mathbf{b}^a + \boldsymbol{\nu}^a)$$

$$\mathbf{T}^g = \begin{bmatrix} 1 & -\gamma_{yz} & \gamma_{zy} \\ \gamma_{xz} & 1 & -\gamma_{zx} \\ -\gamma_{xy} & \gamma_{yx} & 1 \end{bmatrix}$$

$$\mathbf{T}^a = \begin{bmatrix} 1 & -\alpha_{yz} & \alpha_{zy} \\ 0 & 1 & -\alpha_{zx} \\ 0 & 0 & 1 \end{bmatrix}$$

$$\mathbf{K}^a = \begin{bmatrix} s_x^a & 0 & 0 \\ 0 & s_y^a & 0 \\ 0 & 0 & s_z^a \end{bmatrix}, \quad \mathbf{K}^g = \begin{bmatrix} s_x^g & 0 & 0 \\ 0 & s_y^g & 0 \\ 0 & 0 & s_z^g \end{bmatrix}$$

$$\mathbf{b}^a = \begin{bmatrix} b_x^a \\ b_y^a \\ b_z^a \end{bmatrix}, \quad \mathbf{b}^g = \begin{bmatrix} b_x^g \\ b_y^g \\ b_z^g \end{bmatrix}$$

$$\mathbf{L}(\boldsymbol{\theta}^{\text{acc}}) = \sum_{k=1}^M \left( \|\mathbf{g}\|^2 - \|\mathbf{h}(\mathbf{a}_k^S, \boldsymbol{\theta}^{\text{acc}})\|^2 \right)^2$$

$$\mathbf{L}(\boldsymbol{\theta}^{\text{gyro}}) = \sum_{k=2}^M \|\mathbf{u}_{a,k} - \mathbf{u}_{g,k}\|^2$$