Hazel & DST coordinates

2022.07.30

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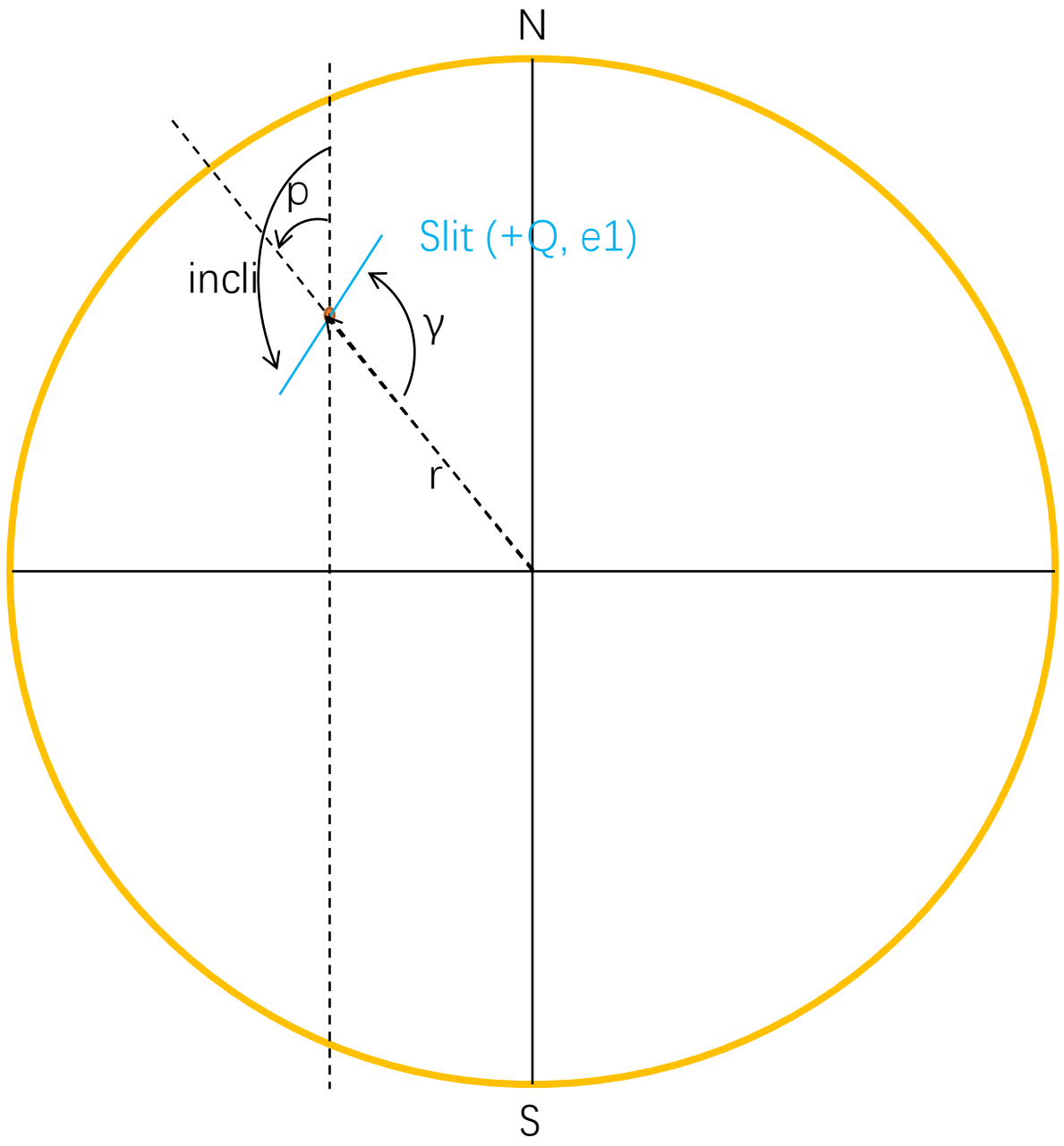
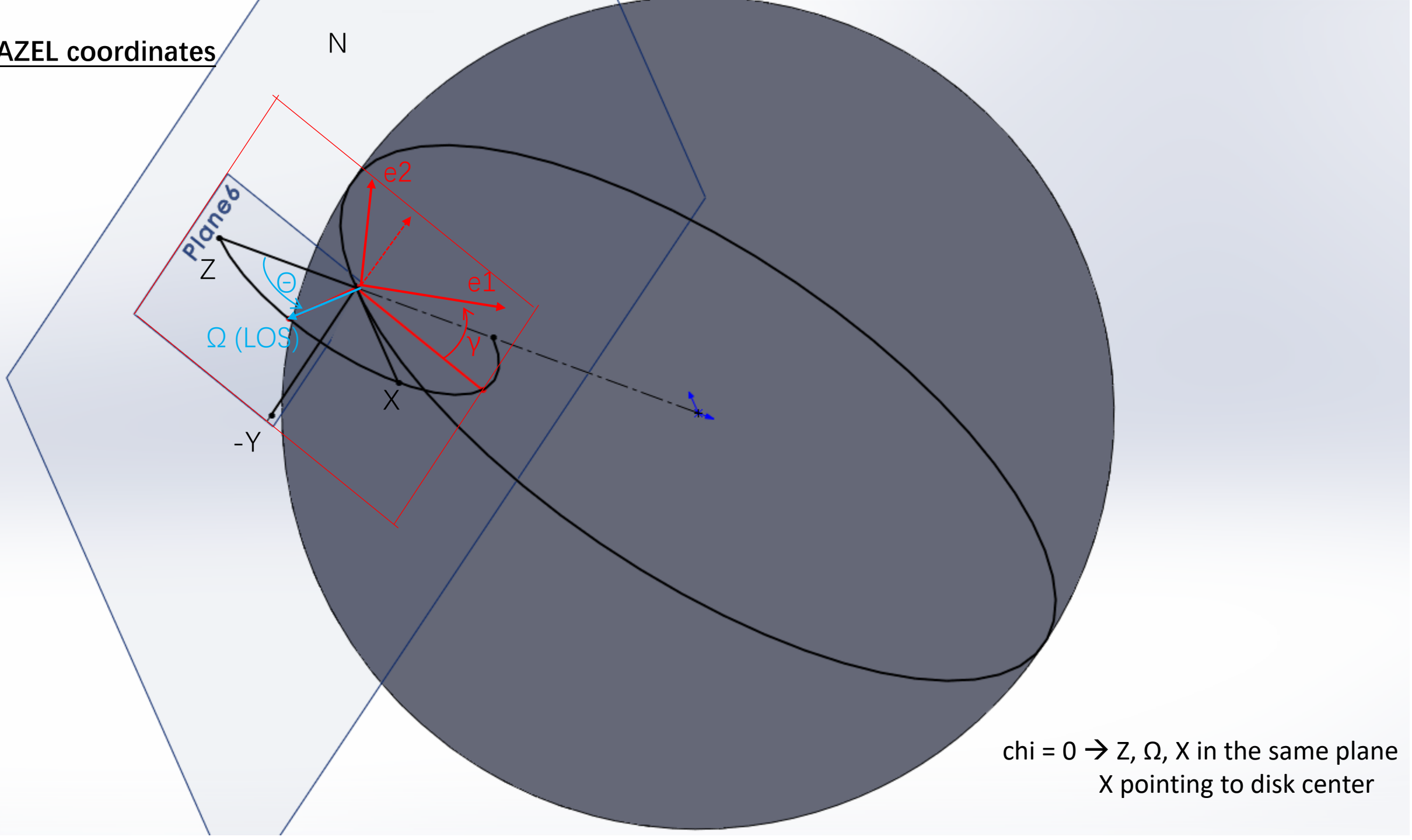
DST coordinates

$\Theta = \arcsin(r / 960'')$

$incli = p + \gamma$

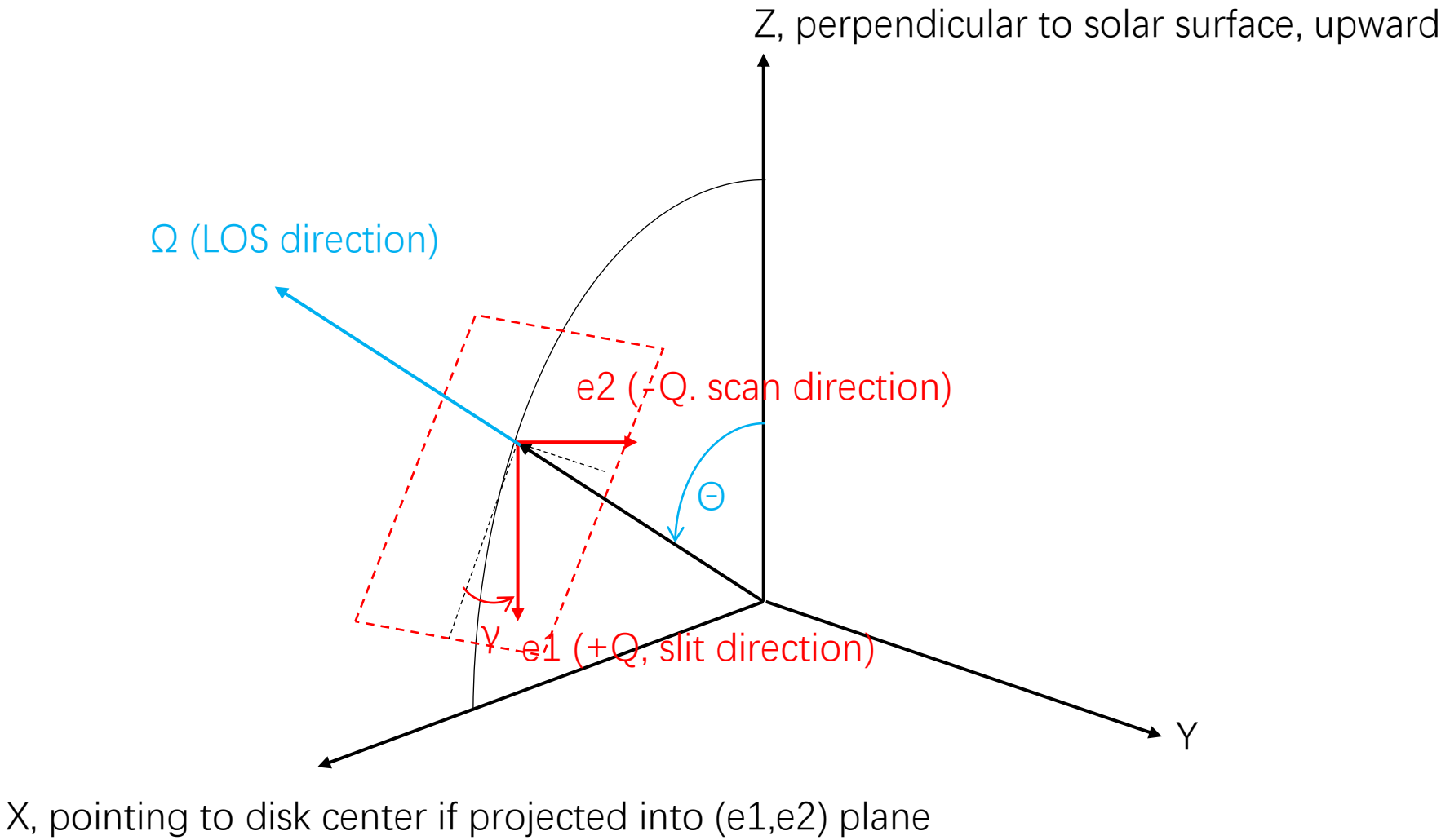


HAZEL coordinates



chi = 0 → Z, Ω, X in the same plane
X pointing to disk center

HAZEL coordinates



chi = 0 → Z, Ω, X in the same plane
X pointing to disk center

From DST status r, p, incli to Θ, γ[, chi=0]

given r, p, incli

$\Theta = \arcsin(r / 960'')$

$\gamma = incli - p$

From inversion result Bx, By, Bz to B_{LOS}, B_{e1}, B_{e2}

given Bx, By, Bz, θ, γ

$B_{LOS} = Bz*\cos(\theta) + Bx*\sin(\theta)$

$B_{e1} = By*\sin(\gamma) + (-Bz*\sin(\theta) + Bx*\cos(\theta))*\cos(\gamma)$

$B_{e2} = By*\cos(\gamma) - (-Bz*\sin(\theta) + Bx*\cos(\theta))*\sin(\gamma)$

Reference :

[Asensio Ramos, Trujillo Bueno & Landi Degl'Innocenti (2008)]

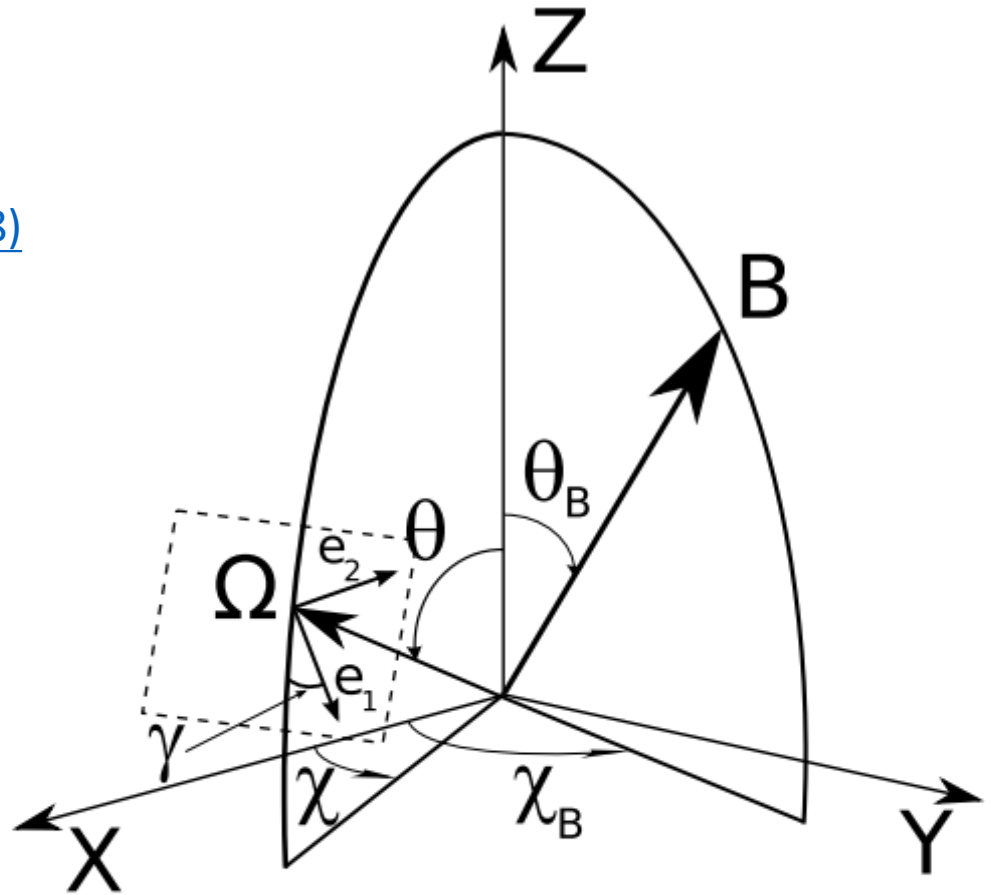


FIG. 1.—Geometry for the scattering event. The Z-axis is placed along the vertical to the solar atmosphere. The magnetic field vector, $\boldsymbol{B}$, is characterized by its modulus B, the inclination angle θ_B, and the azimuth χ_B. The LOS, indicated by the unit vector $\boldsymbol{\Omega}$, is characterized by the two angles θ and χ. The reference direction for Stokes Q is defined by the vector $\boldsymbol{e}_1$ on the plane perpendicular to the LOS. This vector makes an angle γ with respect to the plane formed by the vertical and the LOS. In the figures showing examples of the emergent Stokes profiles, our choice for the positive reference direction for Stokes Q is $\gamma = 90^\circ$, unless otherwise stated. For off-limb observations, we have $\theta = 90^\circ$, while for observations on the solar disk, we have $\theta < 90^\circ$. Note also that χ is generally taken to be 0°.