The Euler Angles of a Rigid Body

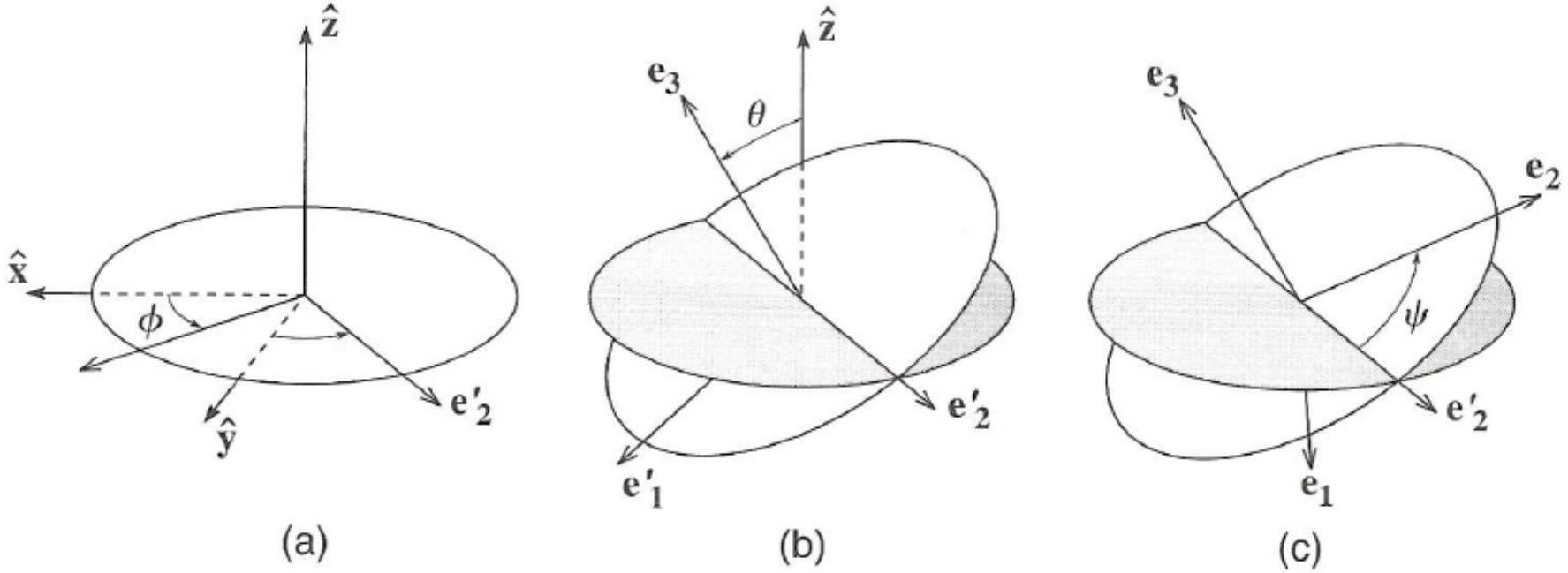
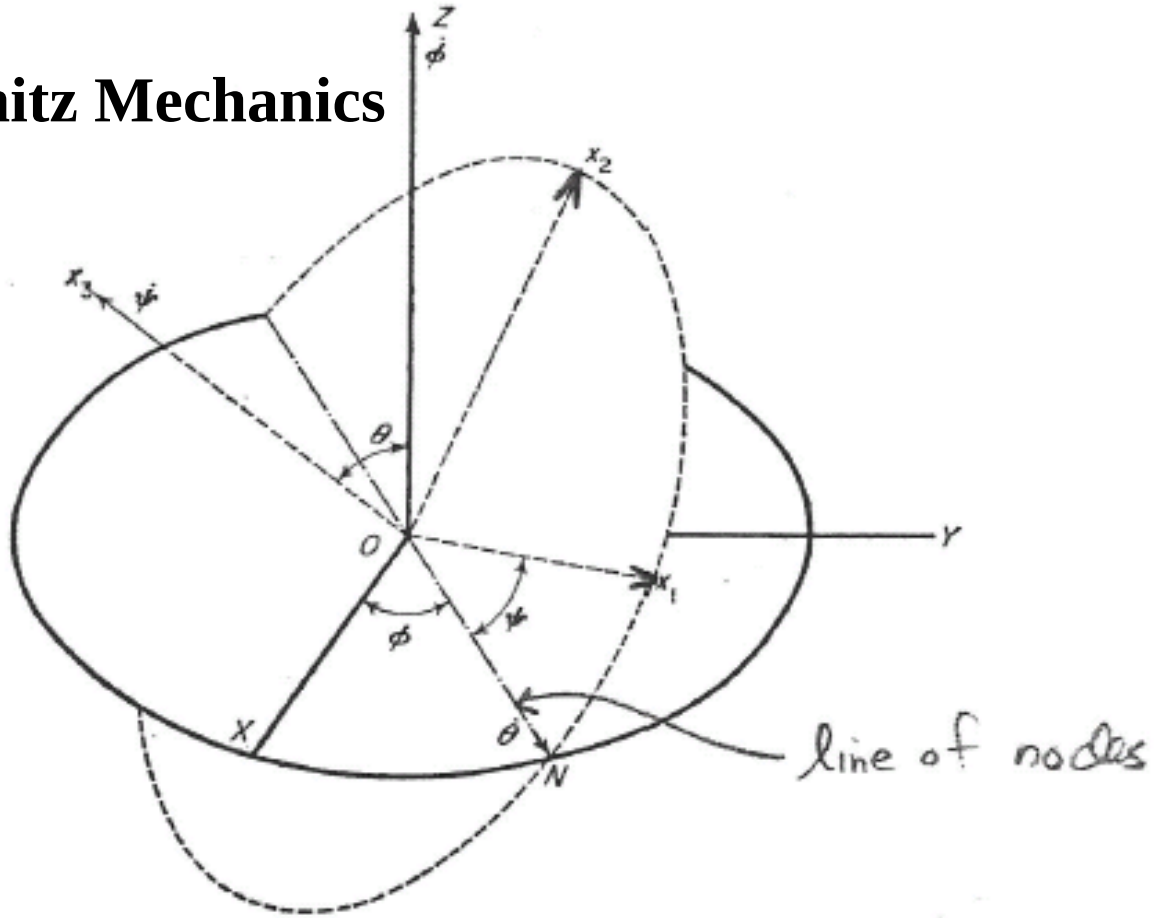


Figure 10.10 Definition of the Euler angles θ, ϕ, and ψ. Starting with the body axes $\mathbf{e}_1$, $\mathbf{e}_2$, $\mathbf{e}_3$ and space axes $\hat{\mathbf{x}}$, $\hat{\mathbf{y}}$, $\hat{\mathbf{z}}$ aligned, the three successive rotations bring the body axes to any prescribed orientation.

John R. Taylor, Classical Mechanics, p. 401

The Euler Angles of a Rigid Body

Landau-Lifshitz Mechanics

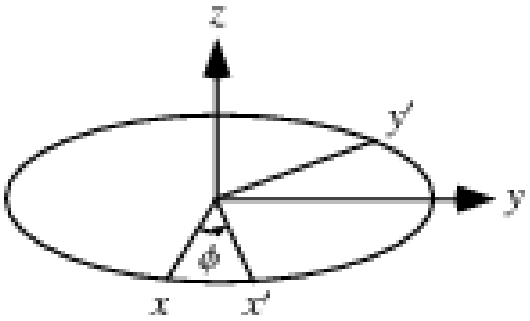


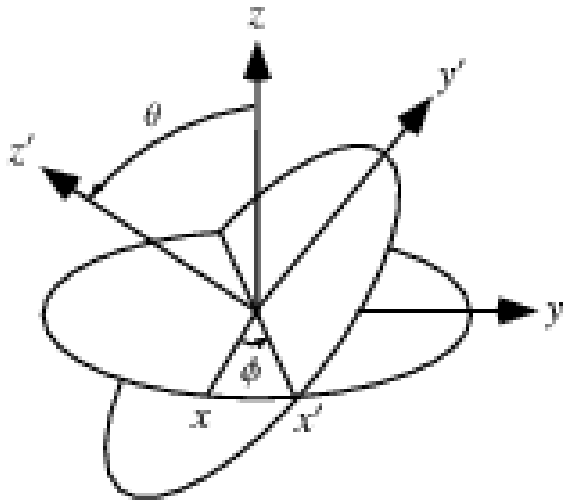
Differences from Taylor:

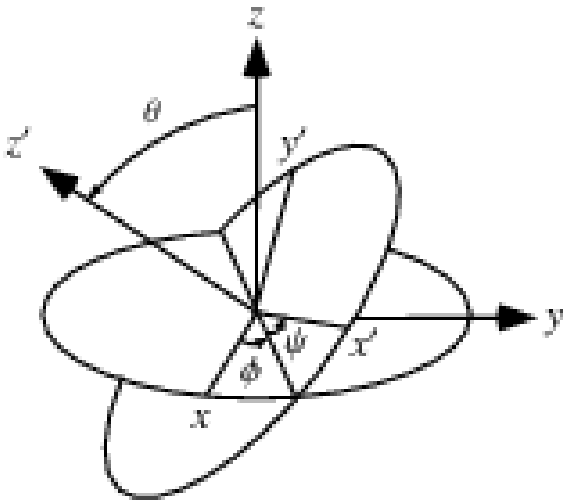
Note that here the "line of nodes" is the rotated "X" axis, as opposed to the rotated "y" axis

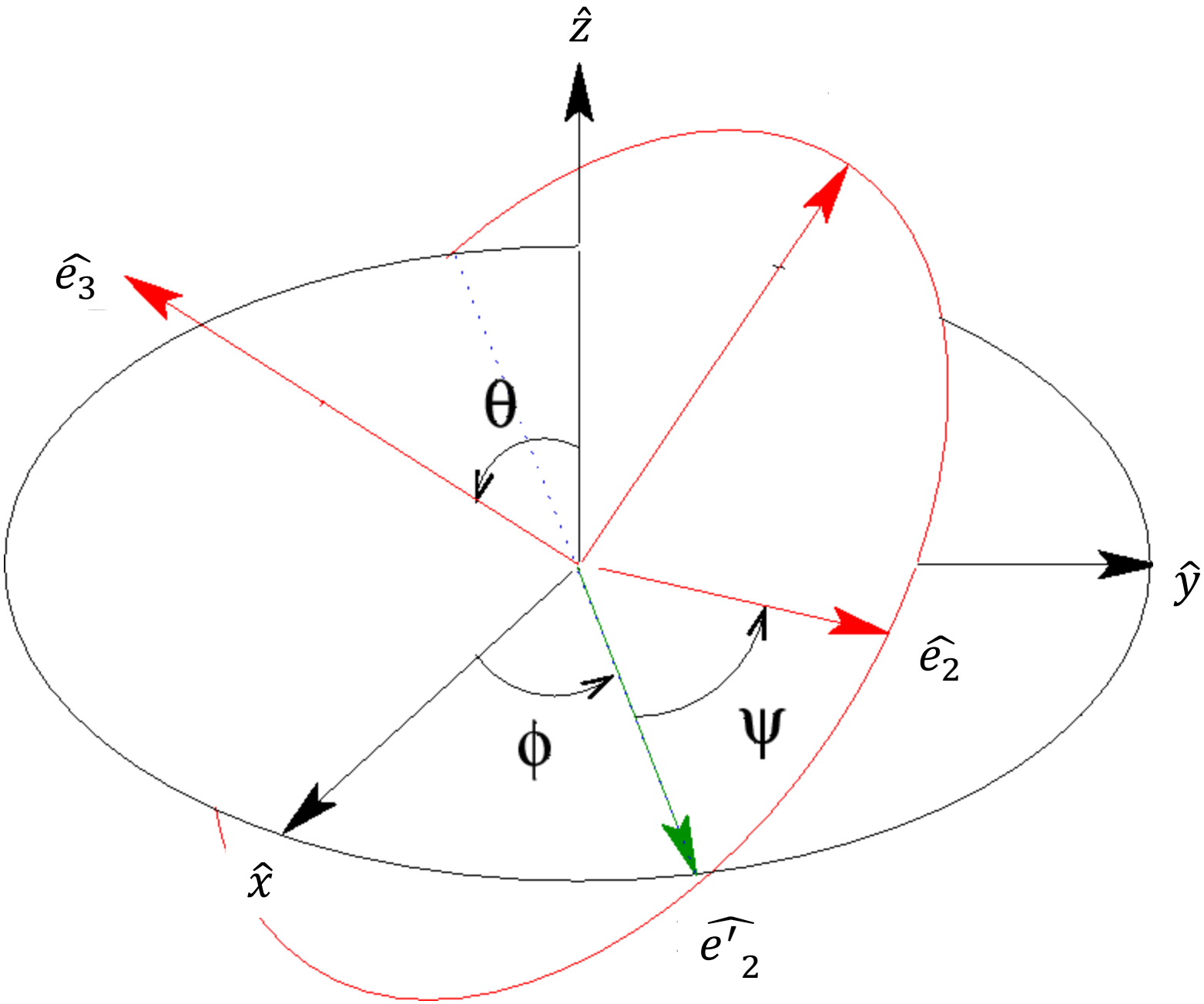
Here the angle ψ is from the "line of nodes" to the final e_1 axis, whereas for Taylor it is the angle from the e_2' axis to the final e_2 axis

The Euler Angles of a Rigid Body








$\hat{z}$
$\widehat{e_3}$
θ
$\hat{y}$
$\widehat{e_2}$
ϕ
ψ
$\hat{x}$
$\widehat{e'_2}$