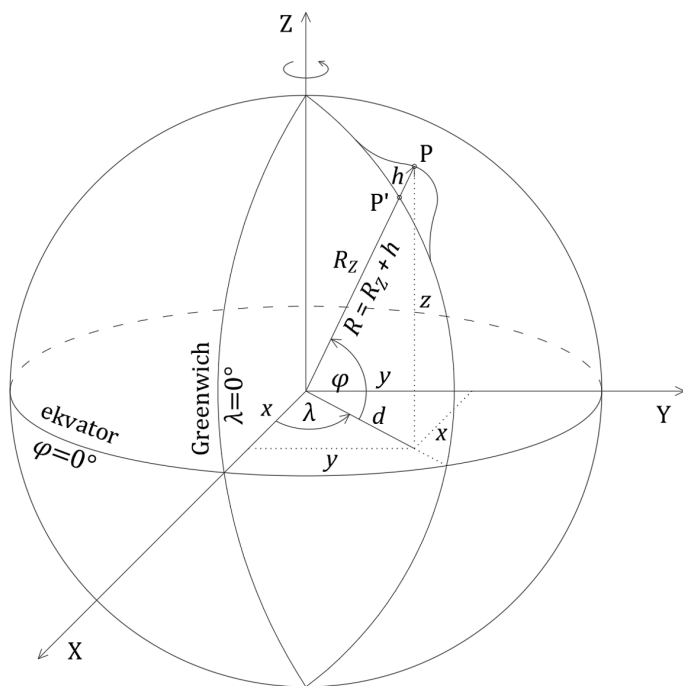


VAJA 10: PROSTORSKI KOORDINATNI SISTEMI

2024/2025

1 $(\varphi, \lambda, R) \rightarrow (X, Y, Z)$: PRETVORBA IZ KROGELNIH KOORDINAT V 3D KARTEZIČNE KOORDINATE



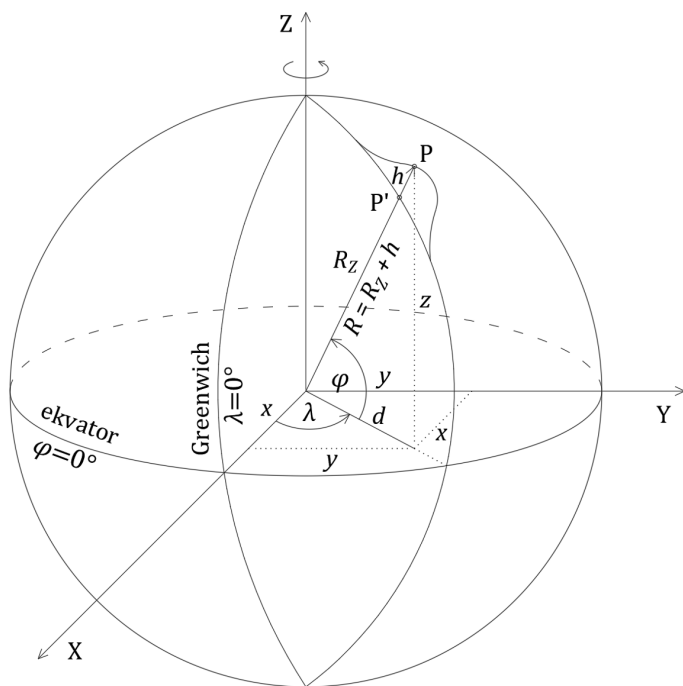
$$X = R \cos \varphi \cos \lambda$$

$$Y = R \cos \varphi \sin \lambda$$

$$Z = R \sin \varphi$$

$$R = R_z + h$$

2 $(X, Y, Z) \rightarrow (\varphi, \lambda, R)$: PRETVORBA 3D KARTEZIČNIH KOORDINAT V KROGELNE KOORDINATE



$$R = \sqrt{X^2 + Y^2 + Z^2}$$

$$\varphi = \arcsin \frac{Z}{R} \in [-90^\circ, 90^\circ]$$

$$\lambda = \arctan \frac{Y}{X} \in (-180^\circ, 180^\circ]$$

Če $X < 0$:

– če $Y \geq 0$: $\lambda = \lambda + 180^\circ$,

– če $Y < 0$: $\lambda = \lambda - 180^\circ$.

$$h = R - R_z$$