Ganymede PhiO Coordinate System

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The GPhiO coordinate system is a fixed coordinate system which is defined by the corotation velocity vector at Ganymede (Phi, ϕ) and the Jovian spin axis (Omega, Ω) [1]. These vectors are perpendicular to one another. Phi is positive in the direction of corotation and Omega is positive northward.

Ganymede's ϕ is the X-coordinate whilst Ω is the Z-coordinate. The Y-coordinate completes the right-handed set and points towards Jupiter from Ganymede. Basis vectors of the system are fixed at the satellite's closest approach [1].

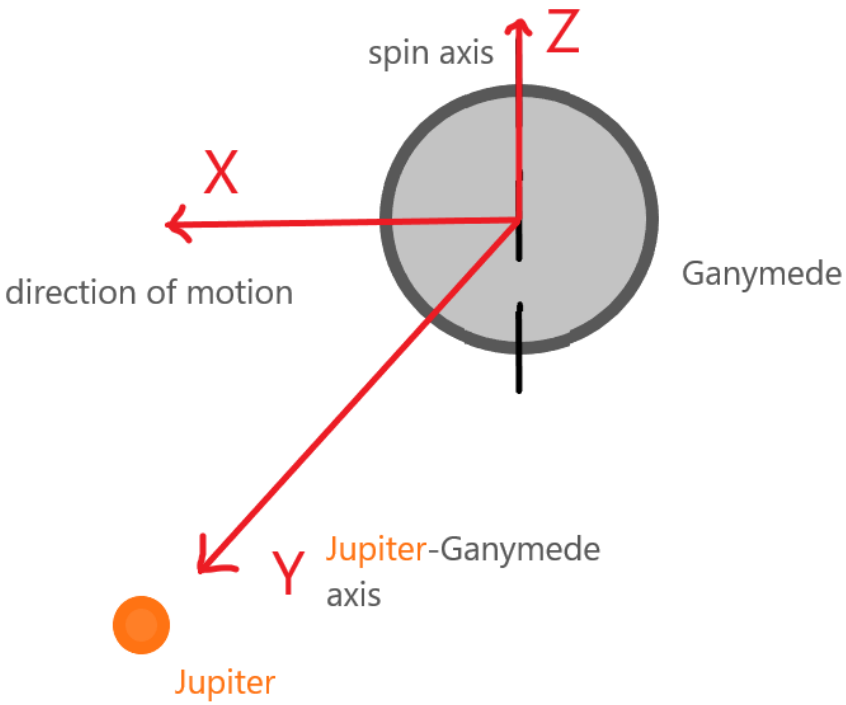

Figure 1: A diagram illustrating the GPhiO coordinate system. It shows that X is in the direction of Ganymede's motion, Y is in the Ganymede-Jupiter axis, and Z is Ganymede's spin axis.

A visualisation of the coordinate system with respect to Jupiter can be seen in figure 1. The X coordinate is in the direction of Ganymede's velocity, the Y coordinate is in the direction of Jupiter from Ganymede, and the Z coordinate is the spin axis, completing the right-handed set [2].

References

[1] NASA. Galileo Orbiter at Jupiter Calibrated Mag High Res V1.0 (PDS). "https://nssdc.gsfc.nasa.gov/nmc/dataset/display.action?id=PSFP-00283".

[2] Margaret Kivelson and Christopher Russell. *Introduction to Space Physics*. Cambridge University Press, Cambridge, 1955.