

57.8: Corrections to the Two-Body Calculation

We've described here the basics of a two-body orbit calculation, but there are a number of corrections that would need to be made to make a more accurate calculation; for example:

- The reference frames are actually not fixed, but move in time because of motions of the Earth. A more careful calculation would take these effects (precession and nutation of the Earth) into account.
 - The orbital elements change with time - notably the longitude of the ascending node Ω and the argument of pericenter ω .
 - Other bodies are always present - not just the planet and the Sun. More complex calculations take the effect of other bodies into account.
 - Parallax corrections: the position of the body in the sky varies slightly depending on the position of the observer on the surface of the Earth.
 - Atmospheric refraction can cause small changes in the apparent position of the body in the sky.
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