

Tables of values for PREM are available in the following:

Preliminary Reference Earth Model (PREM)
<http://geophysics.ou.edu/solid_earth/prem.html>

The following figure gives a graphic image of how density is believed to vary with depth below the surface of the Earth (shown as distance above the centre).

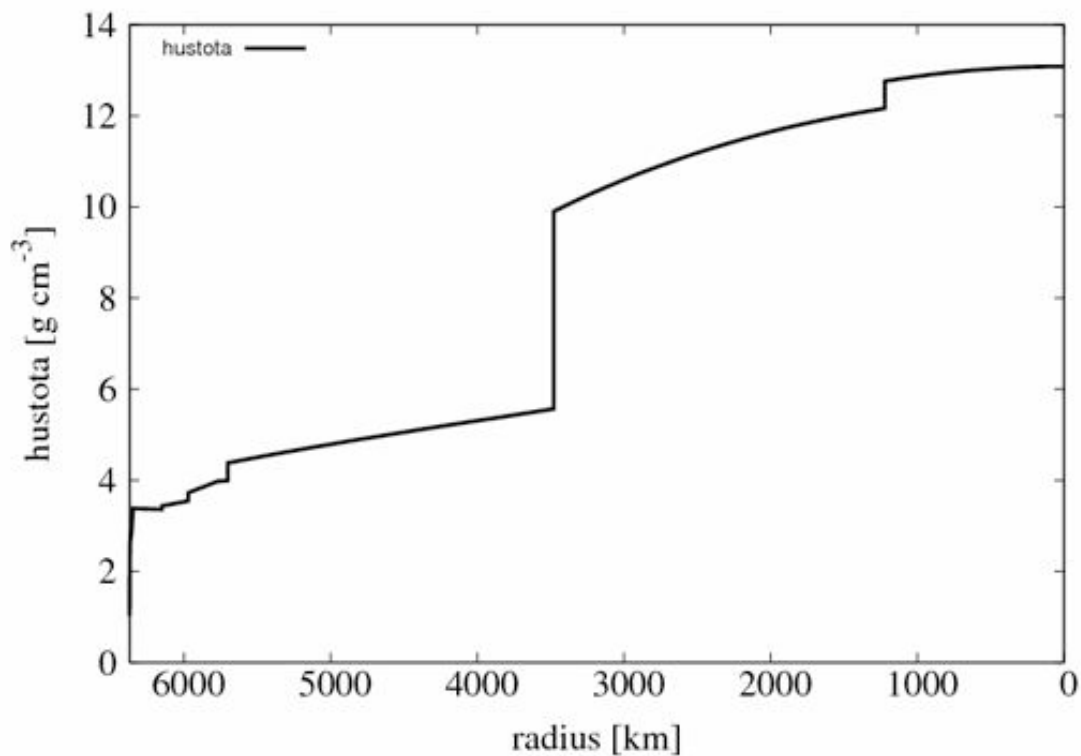


Figure 1. Variation of density (vertical scale) from distance from the centre of the Earth.

From <http://www.skupinafamily.cz/matfyz/bc3/SZZ026/magda/soubory/Stavba_Zeme/Stavba_Zeme.htm> .

Figure 2 is a suggestion of how the desired calculation might be effected.

A calculation point is chosen on the surface (say, the North Pole), and the gravitational attraction due to a thin ring of matter at a perpendicular-to-axis disc section across the Earth (not the Equator) is calculated.

This value is then integrated over the whole surface of the disc, and over the whole axis of the Earth, from the North to the South pole.

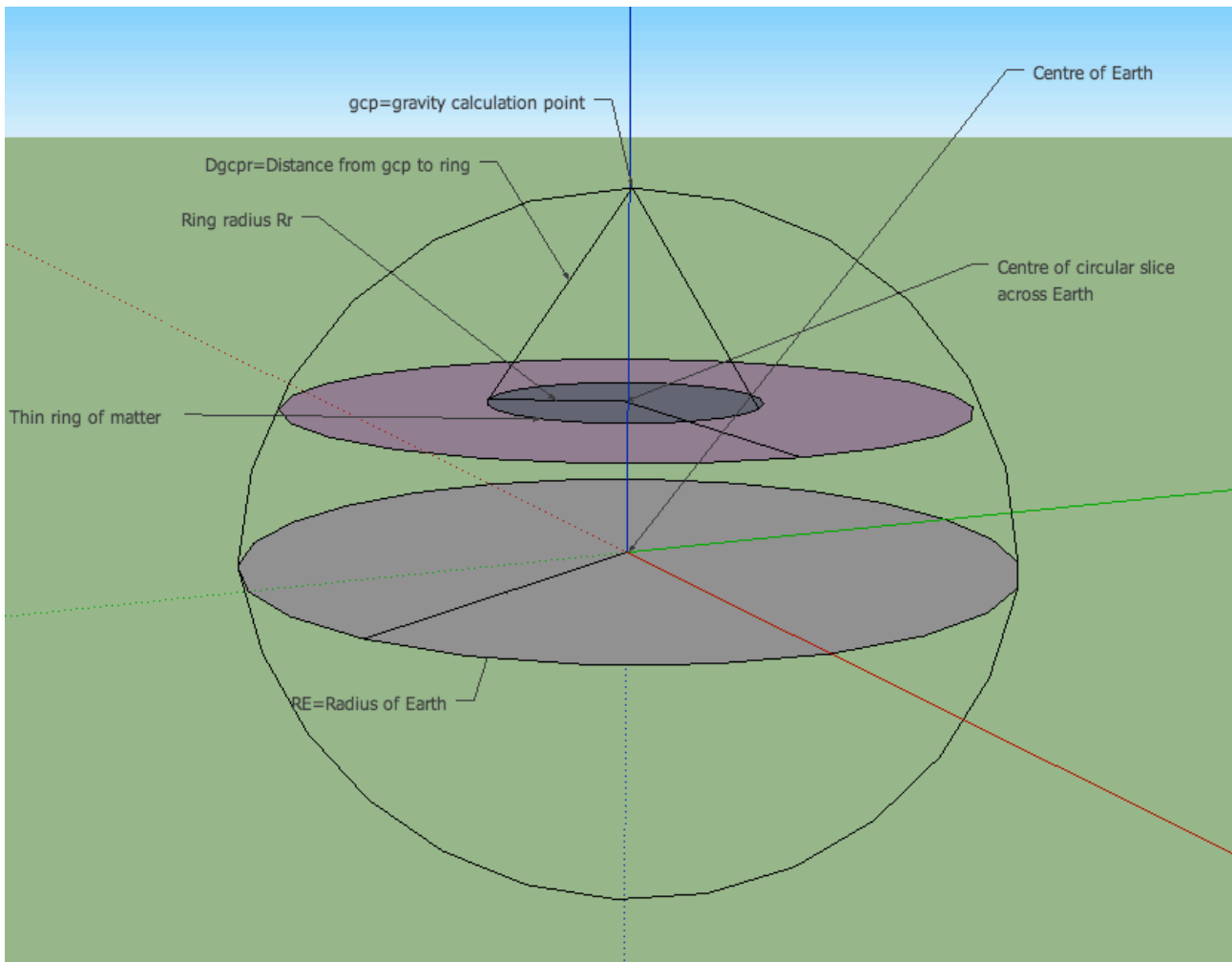


Figure 2. Possible method for calculating Earth's surface gravity using PREM.

The nominal "average" value at the Earth's surface, known as standard gravity is, by definition, 9.80665 m/s^2 . It varies in practice from place to place (http://en.wikipedia.org/wiki/Gravity_of_Earth).