

Exercise 1.2 - Density of gas molecules

v.02

Problem Statement

From the altitude profile of the atmospheric pressure or from its specific mass, calculate the density of gas molecules (number of molecules per unit volume) and pressure in the environment for the following altitudes:

1. Sea level
2. Karman Line (100km)
3. Low Earth Orbit (360km)

Hints

The standard atmospheric model is described in ECSS-E-ST-10-04C Rev.1. Use the low solar activity values.

It is considered that the ideal gas law applies, even at low altitude.

Solution