

# Exercise 2.1 - Solar Wind

v.02

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## Problem Statement

### Numerical data

Mass of the sun [kg]:

$$In[1]:= M_S = 1.99 \times 10^{30};$$

Mass flux of particles [Sun mass/year]:

$$In[2]:= F_m = 1.6 \times 10^{-14};$$

Earth-Sun distance [km]:

$$In[3]:= L = 150\ 000\ 000;$$

Speed of the particles [m/s]:

$$In[4]:= v = 450 \times 10^3;$$

Type of particles: H<sub>2</sub> : 95%, He : 4%, O<sub>2</sub> : 1%

Earth radius [km]:

$$In[5]:= R_{earth} = 6360;$$

### Questions

- Evaluate the total mass of particles arriving on Earth every day.
- Evaluate the number of solar wind particles impacting a 5 x 2 m<sup>2</sup> solar array every day.

### Hint

The solar wind is composed of ionised particles.