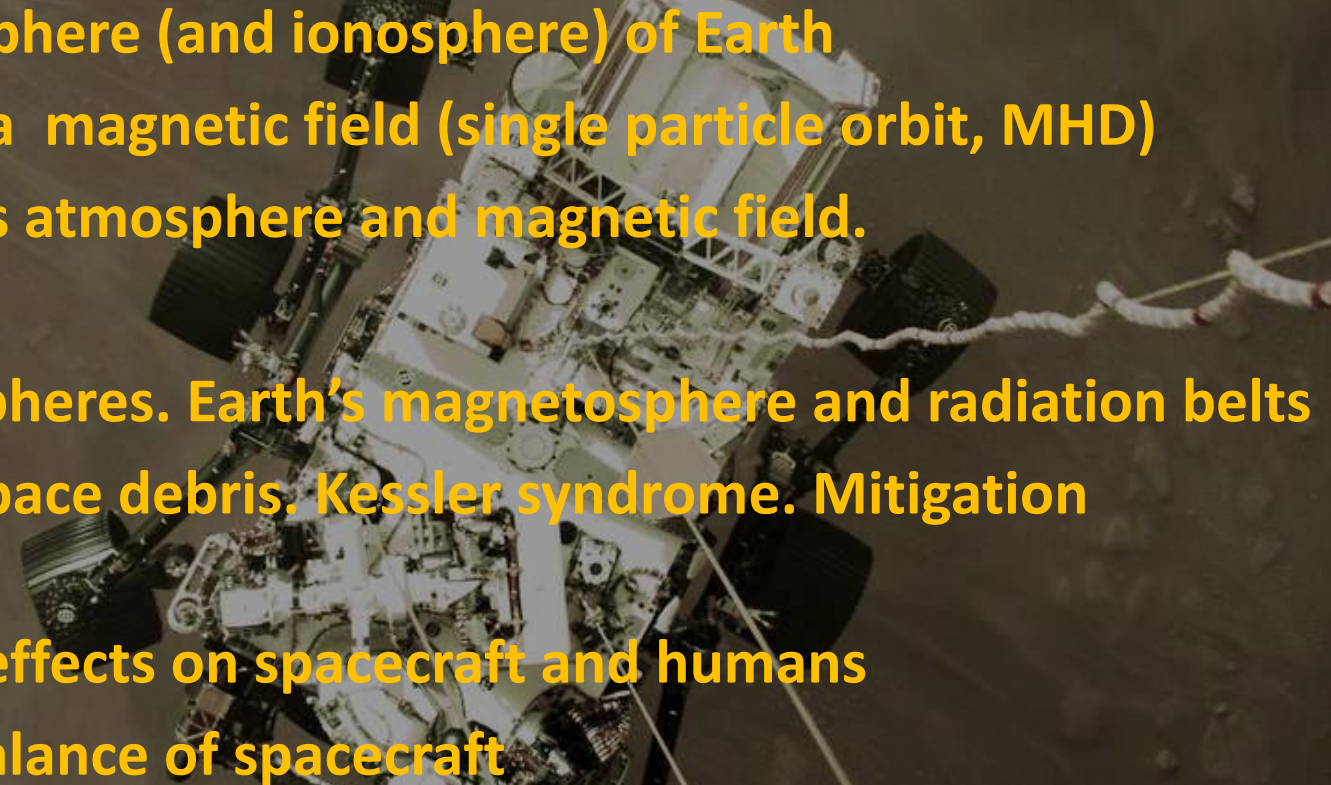


# Space Environment 2020/2021



# Syllabus

- The atmosphere (and ionosphere) of Earth
  - Motion in a magnetic field (single particle orbit, MHD)
  - The sun, its atmosphere and magnetic field.
  - Solar Wind
  - Magnetospheres. Earth's magnetosphere and radiation belts
  - NEO and space debris. Kessler syndrome. Mitigation strategies
  - Radiation effects on spacecraft and humans
  - Thermal balance of spacecraft
- 

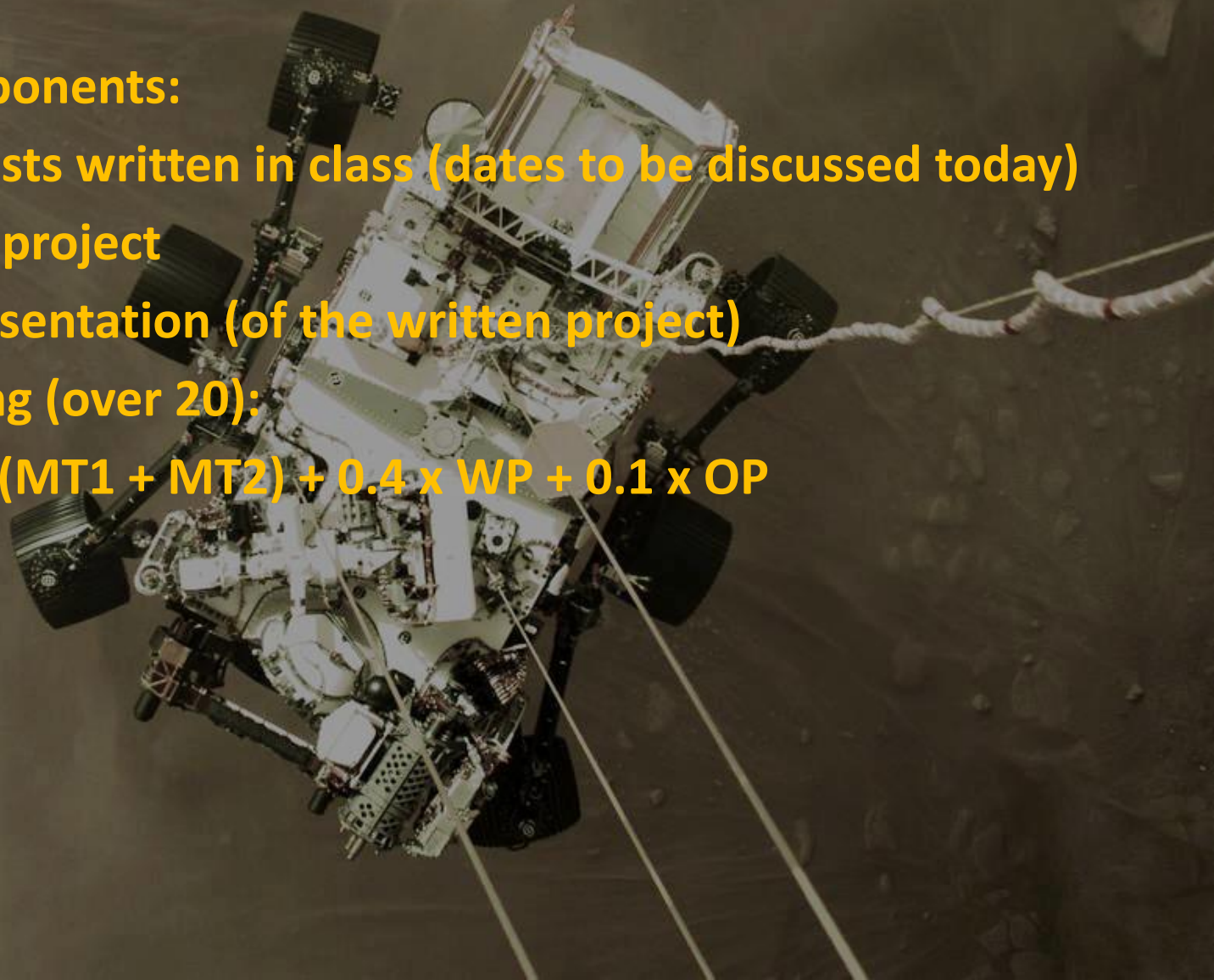
# Bibliography

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- May-Britt Kallenrode, *Space Physics*, Springer-Verlag, 2004.
- I. de Pater & J. Lissauer, *Planetary Sciences*, Cambridge UP, 2001.
- J. Lissauer & I. de Pater, *Fundamental Planetary Science*, Cambridge UP, 2013.
- William Wiesel, *Spaceflight Dynamics*, Aphelion Press, 2010.
- G. W. Prölss, *Physics of the Earth's Space Environment – An Introduction*, Springer, 2004.

# Grading

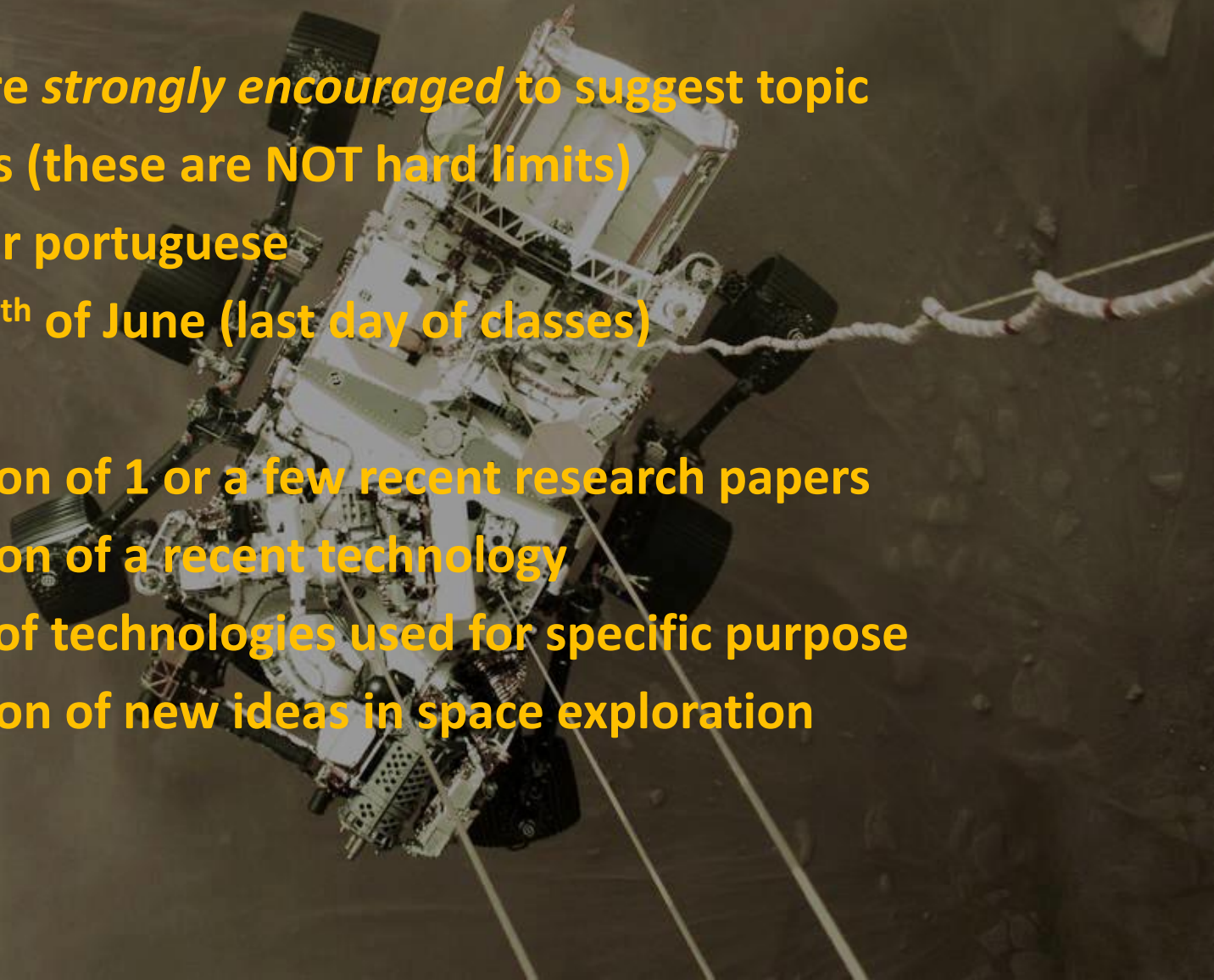
- Three components:
  - 2 minitests written in class (dates to be discussed today)
  - Written project
  - Oral presentation (of the written project)
- Final grading (over 20):

$$G = 0.25 \times (MT1 + MT2) + 0.4 \times WP + 0.1 \times OP$$



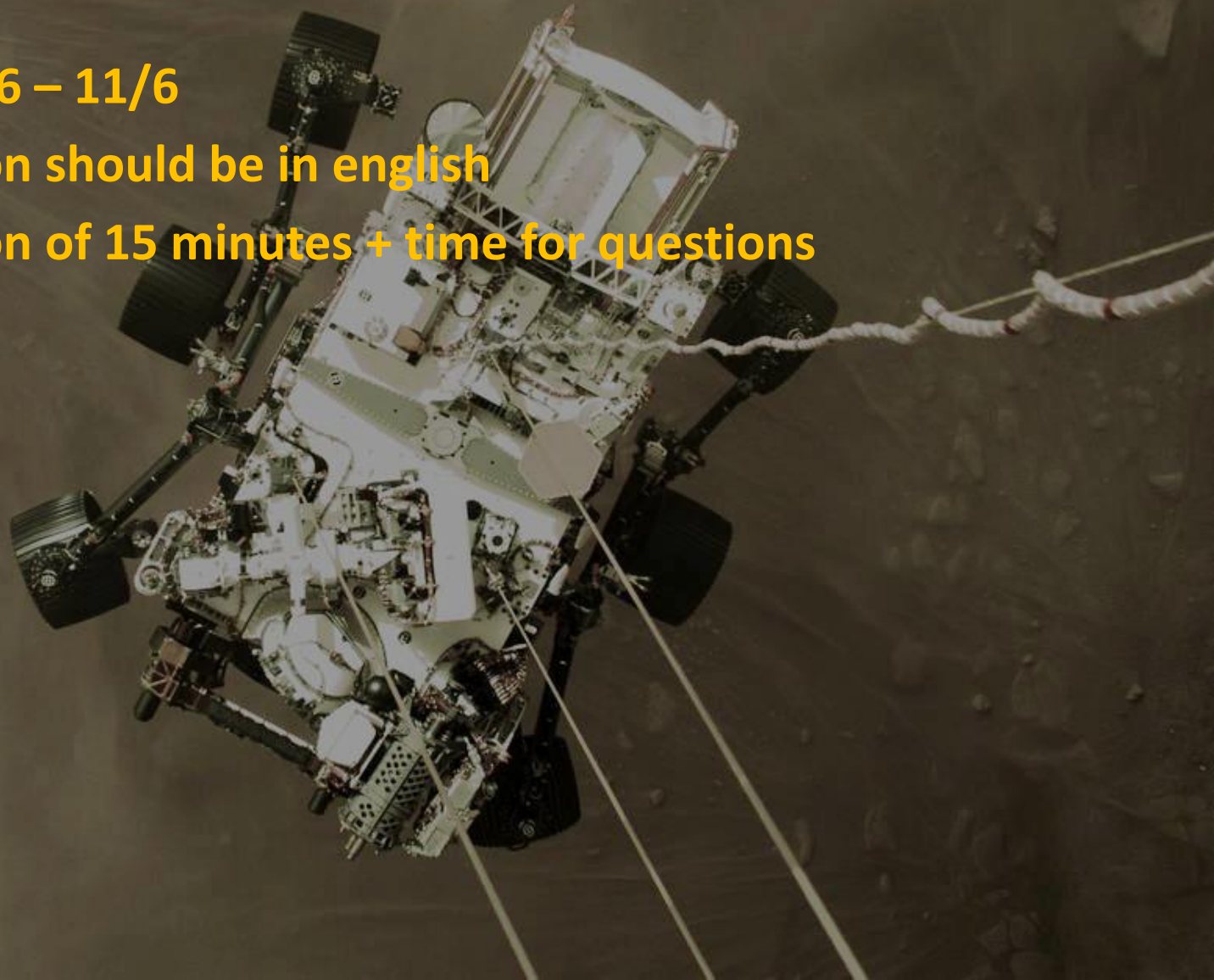
# Written project

- Students are *strongly encouraged* to suggest topic
- 20-40 pages (these are NOT hard limits)
- In english or portuguese
- Deadline: 4<sup>th</sup> of June (last day of classes)
- Could be:
  - Discussion of 1 or a few recent research papers
  - Discussion of a recent technology
  - Review of technologies used for specific purpose
  - Discussion of new ideas in space exploration
  - ...



# Oral presentation

- Week of 6/6 – 11/6
- Presentation should be in english
- Presentation of 15 minutes + time for questions



# Important Dates

- **Classes: from 2021/03/03 to 2021/04/30**
- **1st MT: 2021/04/09**
- **2nd MT: 2021/05/07**
- **Deadline for choosing topic for WR: 2021/04/30**  
**(send me an email with your idea)**
- **Deadline for WP: 2021/06/04**
- **Oral presentations: week of 6th to 11th of June.**