Bachelor Thesis Work

of Choose title Name, Surname

German thesis title

Design of a satellite instrument for re-entry observation

Motivation:
The IRS is developing an instrument for small satellites, dedicated to the observation of re-entry events, like meteors or upper rocket stages. The goal of the meteor observation is to measure the meteor rate and its annual variation. Furthermore, the composition of meteors should be determined. Both measurements help to investigate the development of our solar system. The observation of the re-entry of artificial objects, like rocket stages, helps to improve break up models. Artificial and natural re-entry events should be observed in the UV-spectrum, since this wavelength interval is blocked by the atmosphere and can therefore not be detected by ground based observations.

The preliminary design of the instrument includes three cameras: One for night time meteor observations, one for day time meteor observation and tracking, and one UV camera intended for spectroscopic data acquisition. In the scope of this thesis, the design of the tracking and UV system shall be detailed. This includes choosing and designing the spectroscopic hardware in front of the UV camera. Different concepts (regarding grating type and resolution) are to be analysed with respect to their scientific performance.

Task:
- Familiarization with re-entry events and observations
- Assessment of the scientific requirements for UV spectrometer
- Development of different instruments design and evaluation of the solutions
- Documentation of results

Supervisor: Jona Petri (petri@irs.uni-stuttgart.de), Stefan Löhle

Starting date: Click for date
Submission until: Click for date

Acknowledgement of receipt:
I hereby confirm that I read and understood the task of the bachelor thesis, the juridical regulations as well as the study- and exam regulations.

Prof. Dr.-Ing. Sabine Klinkner
(Responsible Professor)

Signature of the student
Declaration

I, Name, Firstname hereby certify that I have written this please select a topic independently with the support of the supervisor, and I did not use any resources apart from those specified. The thesis, or substantial components of it, has not been submitted as part of graded course work at this or any other educational institution.

I also declare that during the preparation of this thesis I have followed the appropriate regulations regarding copyright for the use of external content, according to the rules of good scientific and academic practice\(^1\). I have included unambiguous references for any external content (such as images, drawings, text passages etc.), and in cases for which approval is required for the use of this material, I have obtained the approval of the owner for the use of this content in my thesis. I am aware that I am responsible in the case of conscious negligence of these responsibilities.

Place, Date, Sign

I hereby agree that my please select a topic with the following title:

Enter title

is archived and publicly available in the library of the Institute of Space Systems of the University of Stuttgart please select a topic and that the thesis is available on the website of the institute as well as in the online catalogue of the library of the University of Stuttgart. The latter means that bibliographic data of the thesis (title, author, year of publication, etc.) is permanently and worldwide available.

After finishing the work I will, for this purpose, deliver a further copy of the thesis along with the examination copy, as well as a digital version.

I transfer the proprietary of these additional copies to the University of Stuttgart. I concede that the thesis and the results generated within the scope of this work can be used free of cost and of temporal and geographical restrictions for the purpose of research and teaching to the institute of Space Systems. If there exist utilisation right agreements related to the thesis from the institute or third parties, then these agreements also apply for the results developed in the scope of this thesis.

Place, Date, Sign

---

\(^1\) Stated in the DFG recommendations for „Assurance of Good Scientific Practice“ or in the statute of the University of Stuttgart for „Ensuring the Integrity of Scientific Practice and the Handling of Misconduct in Science“