Master Thesis- LISA DFACS: Mode transitions and Acquisition and FDIR

Reference Code 10413904 SS EN EXT 1

- Site:	Airbus Defence and Space Friedrichshafen (ex Astrium ST)
- Target Group:	Student
- Work Contract Type / Working Time:	Final-year thesis / Full time
- Work Experience:	Not specified
- Functional Area:	ENGINEERING / Flight & Space Physics
- Education:	Apprentice, Student / Engineering / Aerospace Engineering

Airbus is a global leader in aeronautics, space and related services. In 2017, it generated revenues of € 67 billion and employed a workforce of around 130,000. Airbus offers the most comprehensive range of passenger airliners from 100 to more than 600 seats. Airbus is also a European leader providing tanker, combat, transport and mission aircraft, as well as Europe's number one space enterprise and the world's second largest space business. In helicopters, Airbus provides the most efficient civil and military rotorcraft solutions worldwide. Our people work with passion and determination to make the world a more connected, safer and smarter place. Taking pride in our work, we draw on each other's expertise and experience to achieve excellence. Our diversity and teamwork culture propel us to accomplish the extraordinary - on the ground, in the sky and in space.

Description of the job

Are you looking for a master thesis? Would you like to discover the work of a Space Engineer? Then apply now! Then apply now! We look forward to you joining us at the advanced projects department .

Location: Friedrichshafen
Start: October (flexibel)

LISA is the first space mission to establish the new field of gravitational wave astronomy, observing highly energetic events within the entire event horizon of our universe. As the instrument is distributed over a constellation of three spacecraft with ultra high relative measurement precision
needs, LISA is among the most ambitions missions ever flown. Nevertheless, developments for ground based observatories, a long mission formulation phase as well as the very successful precursor mission LISA Pathfinder, have pushed this observatory into the range of today's technical capabilities.

The main objective of drag-free attitude control system (DFACS) is to ensure free fall of the test massdes in dedicated degrees of freedom by shielding the test mass from all external disturbances. In LISA, the main concern is the sensitive axis along the line of sight of each telescope. In order to detect the changes in the interferometer arm associated with the passing of a gravitational wave, any non-gravitational disturbances have to be minimized in the frequency band of interest

One of the critical DFACS elements, and also focus of this work, is the gravitational reference sensor (GRS) featuring large-gap electrode housings with caging and release mechanisms as well as electrodes providing electrostatic test mass actuation and sensing capabilities in all six test mass degrees-of-freedom. The main GRS functionalities will be directed through front-end electronics (FEE) boxes, enabling the force and torque actuation capabilities.

Tasks

The main objective of the master thesis is to concentrate on the GRS actuation architecture, algorithms and requirements for the different modes. The following tasks are to be addressed:
- Literature research on the precursor mission LISA Pathfinder and the gravitational reference sensor.
- Review LPF flight data release tests and derivation of worst case test mass release conditions
- Analysis of the GRS FEE architecture and functionalities.
- Analysis of different (state-of-the-art) actuation methodologies to identify potential alternatives for the well-proven actuation approaches used for LISA Pathfinder.

- Development of performance model of the GRS actuation model for validation and verification of the developed algorithms.

This job requires an awareness of any potential compliance risks and a commitment to act with integrity, as the foundation for the Company's success, reputation and sustainable growth.

Skills

You offer:
- Enrolled Master student (m/f) within Aeronautical Engineering
- Good level and first experience in Control Engineering.
- Good level in Electrical Engineering would be an asset.
- Acquainted Matlab and Simulink implementation
- Languages: English is mandatory
- German would be an asset.

Contact

Does this job description fit your objectives and profile? Take the next step in your career and come and join us!

How to apply:
Online via www.jobs.airbus.com
Reference number 10413904
Please provide the following documents: cover letter, C.V., relevant certificates, current certificate of enrolment

You can direct your cover letter to: Mrs.Seeger
Should you have general questions regarding this position you can write an E-Mail to: students.germany@airbus.com

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