

In-orbit demonstration of quantum-based gyroscope technology

FBH

TRUMPF

January 2024

February 2024

Implementation

January 2027 February 2027

LAUNCH

April 2027

Partner QANT 🗐 BOSCH

> Project Proposal for Funding

2021

 \odot

German Space Operations Center - Institute for Software Technology
Kompetenzzentrum
Institut for Communication and Navigation

OYRO Kick-Off

Quantum-based gyroscope for space navigation

Nuclear magnetic resonance (**NMR**) is a promising technology for future high-precision gyroscopes. Such quantum-based gyroscopes (**QYRO**s) have the potential to be a middle-ground between the small form-factor of MEMS and the performance of fiber-optics gyroscopes, making them extremely attractive for an application on small-to-medium space platforms. In this respect, **DLR-GK** is leading the **PETER** (**P**erformance **E**valuation **T**est **E**nvironment for qy**R**o) cubesat mission. The mission will host a **QYRO** along-side other reference units for an in-depth validation of its performance in space.

DLR-GK enables navigation and timing technology demonstration

Main focus

- Technology transfer from concept/ prototype to demonstration model
- Project management and system design solutions
- Planning and executing AITV activities

Experience

- Space project system definition and design
- Prototyping of electromechanical and optical systems
- Simulations
- (MBSE, thermal, structural, etc.)ECSS compliant AITV from prototype to flight model.

Facilities

- AIVT Laboratory with an ISO 8 Cleanroom
- Certified instruments and personnel

QR Code website QYRO:

https://www.quantentechnologien.de/ forschung/foerderung/leuchtturmprojekteder-quantenbasierten-messtechnik/qyro.html



Satellite Platform

Primary structure Secondary structure Command and data handling system Communications system Electrical power system