idw - Informationsdienst Wissenschaft
Nachrichten, Termine, Experten

Press release

Rheinische Friedrich-Wilhelms-Universität Bonn
Katrin Piecha

01/23/2025
http://idw-online.de/en/news846228

Personnel announcements, Transfer of Science or Research
Physics / astronomy
transregional, national

Simon Stellmer receives ERC Proof of Concept Grant

Professor Simon Stellmer from the University of Bonn receives a 'Proof of Concept Grant' from the European Research Council (ERC) for his project „GyroRevolutionPlus". With the funding of €150,000 for up to 18 months, the physicist will continue to prepare his research results from previous ERC projects for commercial application. This is the second time that Professor Stellmer has been successful in this funding program after having received a grant for his previous project 'GyroRevolution' in 2023. The precision instruments he and his team are developing can be used to improve natural disaster early warning systems.

"With GyroRevolutionPlus, we are improving the measurement accuracy of ring laser gyroscopes, which we use to capture slow and deep Earth rotations or even the finest movements of buildings," explains Professor Simon Stellmer from the Institute of Physics. These precision measurement devices record changes in ground motion and can therefore be used to improve the prediction of natural disasters such as earthquakes or landslides. "By miniaturising the gyroscopes, we can also monitor the stability of very large structures, such as bridges or dams, with regard to the smallest changes and react to them at an early stage," says Simon Stellmer, who is also a member of the Cluster of Excellence "Matter and Light for Quantum Computing" (ML4Q) and the Transdisciplinary Research Area "Matter" at the University of Bonn.

Innovation of extremely precise rotation sensors

The project is based on research work in quantum physics in which Professor Stellmer and his team have developed a new technology for gyroscopes that offers maximum sensitivity at very low rotation rates. Previously, ring laser gyroscopes or fibre-optic gyroscopes used in such cases eventually reached the limits of measurement accuracy. The working group now uses high-precision gyroscopes of various designs - the largest measuring four by four meters. As part of the ERC Proof of Concept funding, much smaller, more robust gyroscopes are now being developed for practical use and validated outside the laboratory. In the future, these will be used in boreholes to measure ground movement in a standardised way.

Two consecutive 'Proof of Concept Grants'

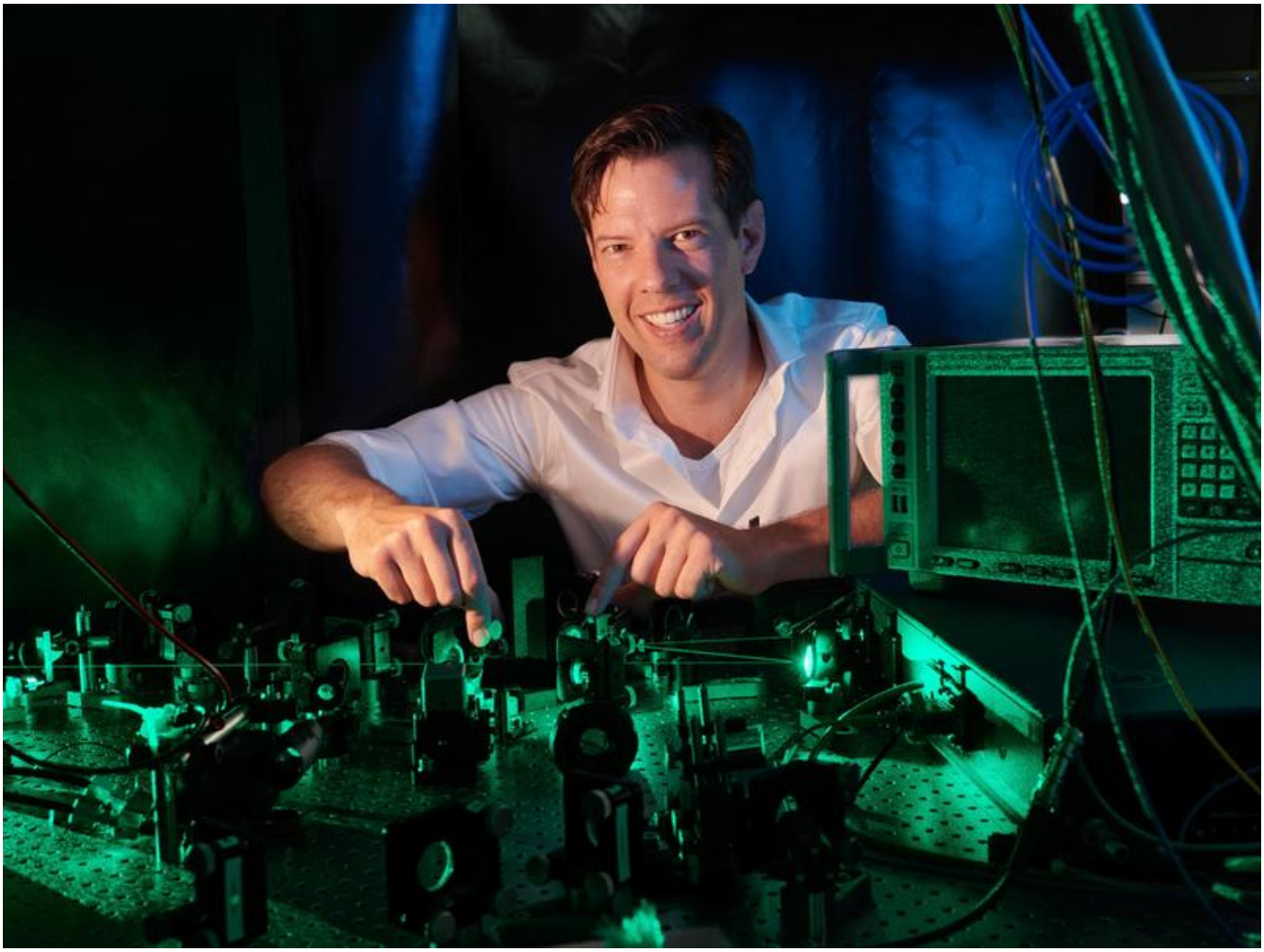
This is the second time that Simon Stellmer has received a 'Proof of Concept Grant' for his endeavor, allowing him to build on preliminary work from previous years. He already worked on precision measurements in the ERC Starting Grant project, which he received for his research in 2017. The first 'Proof of Concept Grant', awarded in 2023, laid the foundation for the path from research to commercialisation: The team demonstrated the feasibility of the approach, conducted a market analysis and filed several patent applications. With the renewed 'Proof of Concept' funding, the project will now drive a spin-off to commercialise the revolutionary high-precision gyroscope technology in 2025. The technology will be further developed into a market-ready product, suitable business partners will be identified and a go-to-market strategy will be defined.

“In particular, the real-world applications of this innovative technology, such as disaster prevention and the prevention of building collapse, demonstrate its high practical relevance and the enormous market potential,” explains Sandra Speer, Head of the Transfer Center enaCom at the University of Bonn, which is advising on the project. She emphasizes: “It is a great success for the transfer activities at the University of Bonn that the project has also received a second ERC Proof of Concept grant.” With its innovation scouting and start-up consulting services, enaCom supports innovative application-oriented research projects and accompanies start-up projects on their way to becoming a successful business.

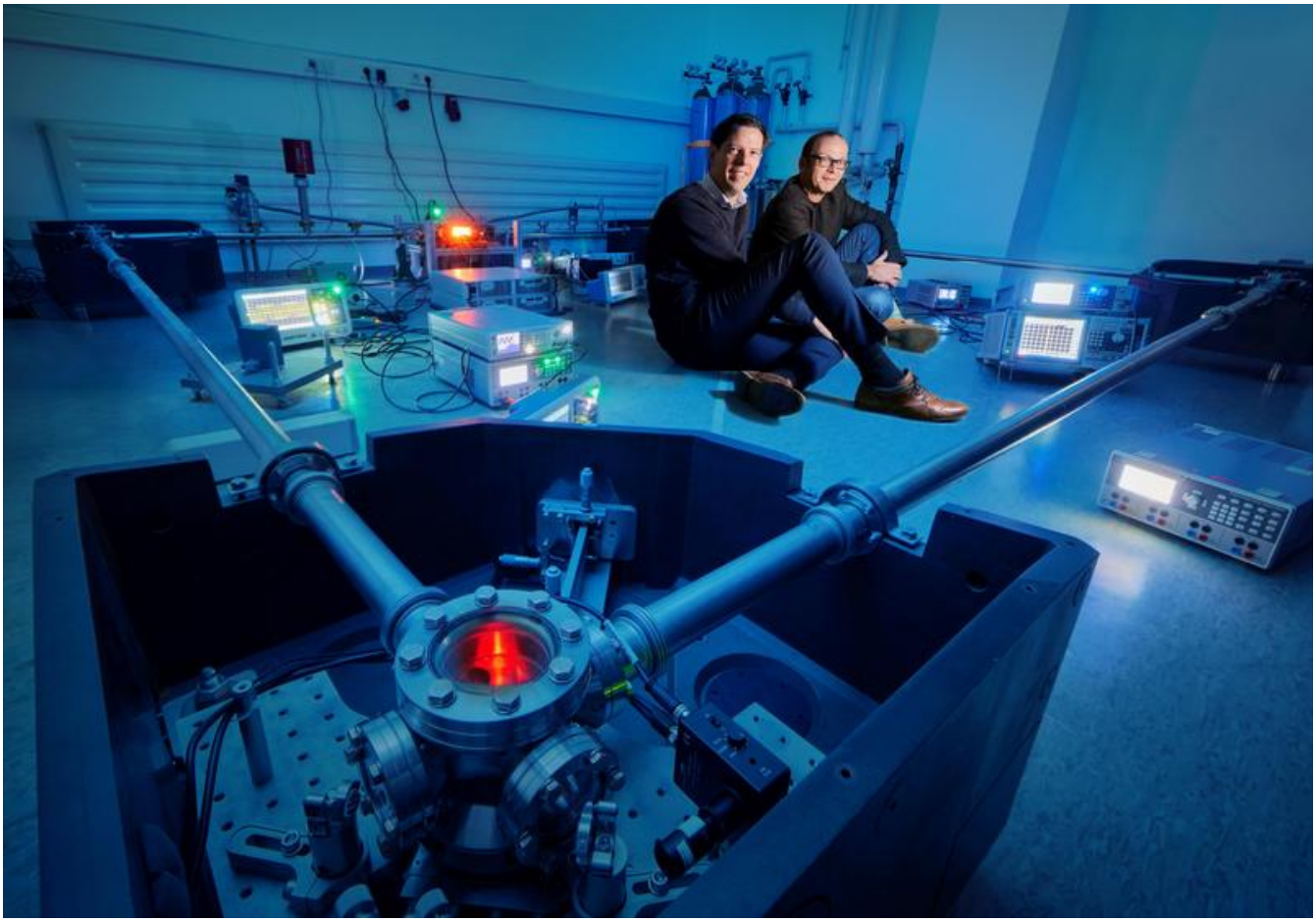
contact for scientific information:

Prof. Dr. Simon Stellmer
Institute of Physics
University of Bonn
Phone: +49 228 733720
E-Mail: stellmer@uni-bonn.de

Verena Billmann
Transfer Center enaCom
University of Bonn
Phone: +49 228 7362027
E-Mail: billmann@verwaltung.uni-bonn.de



Professor Simon Stellmer from the University of Bonn adjusting a laser used for precision measurements
Volker Lannert
Volker Lannert / University of Bonn



Insight into the ring laser laboratory at the University of Bonn.
Volker Lannert
Volker Lannert / University of Bonn