

TULON PHOTONICS

SPIN-OFF FELLOWSHIP, 2. AUSSCHREIBUNG, 1. EINREICHFRIST (SEPT. 2022)

Projektkurztitel:	Future Lasers (Tulon Photonics)
Projektlangtitel:	Tunable ultra-low noise lasers of the future
Antragstellende Organisation:	Institute of Science and Technology Austria
Fellow:	Dr.rer.nat. Fritz Diorico MSc.
Host:	Ass.Prof.Dr. Onur Hosten
Projektstandort:	Klosterneuburg
Laufzeit:	04.01.2023 – 30.09.2024

PROJEKTZIEL:



The laser is at the heart of our photonics industry. As end users, we take its benefits to our society for granted. At Tulon Photonics, we specialize in the next generation of lasers with *simultaneous frequency noise performance and tunability*. Despite the vast amount of laser companies, the supply of industrial-grade, state-of-the-art tunable lasers with ultra-low frequency noise is scarce. These two features together are in high demand in a laser industry as they increase bandwidth and sensitivity in modern photonics applications. Some notable applications include:

- *Communications*: whether in space with satellites or on land with fiber optic links, lasers with the 'best' noise performance and tunability increase bandwidth by 100 times, probably more. For us end users, this means faster Internet and better accessibility.
- *Remote sensing*: Remote sensing encompasses a wide range of applications (oil/gas exploration, lidar, remote spectroscopy, fiber exploration, etc.), with lasers forming the backbone in each case. Ultra-low noise tunable lasers will greatly increase sensitivity and enable longer detection range with better resolution.
- *Emerging quantum technologies*: State-of-the-art lasers are the foundation for emerging quantum technologies. Whether quantum communications, computing or sensing, the new quantum technologies require only the best.

We are proud of our intellectual property (SquashLock), which is supported by two EP filings and a PCT application. It is a new laser frequency tuning technique developed by Fritz Diorico and Onur Hosten at IST - Austria. As a laser frequency tuning technique, it enables simultaneous frequency tuning and ultra-low noise, surpassing even the industry standard for laser frequency stabilization.

Ultra-low frequency noise is typically only available for research-built lasers that occupy large spaces. Tulon Photonics' intellectual property enables cost-effective/energy efficient, ultra-low noise performance in compact laser modules integration-ready for original equipment manufacturers (OEMs). Under the spin-off grant, we will take the first major steps toward engaging the photonics industry by developing prototype demonstrators.

At Tulon Photonics, we aim to enable your application(s) to move deeper into the 21st century, ushering humanity into a new age of photonics.

VISION SPIN-OFF:

- Set 'the' standard for highly tunable ultra-low frequency noise industrial lasers with scientific performance.
- Create industry ready laser prototypes to engage with targeted customers.
- We aim to enable photonics applications that are limited by laser frequency noise and tunability.

Weitere [Information zum Spin-off Fellowship](#) finden Sie auf der FFG-Homepage.