

QUANTUM SENSING & TIMING

Developing Quantum Technologies from Benchtop to Field

The Space Dynamics Laboratory (SDL) develops atom-referenced sensors for spaceflight. SDL's team in Albuquerque, New Mexico, matures and demonstrates technologies as part of the Air Force Research Laboratory's (AFRL) quantum sensing and timing (QST) team.

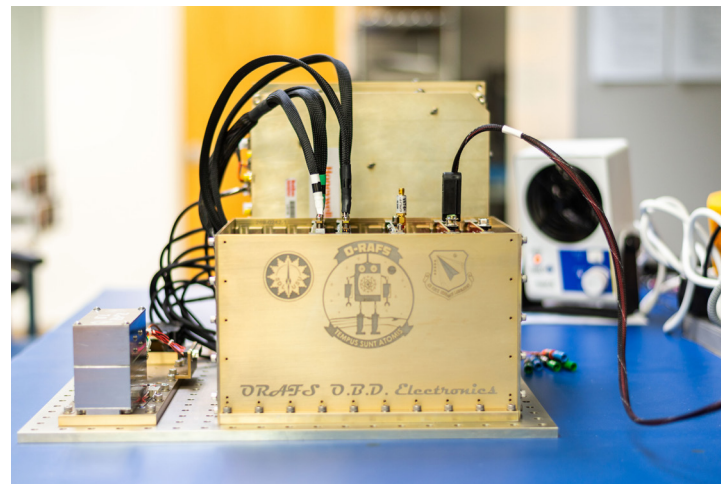
SDL thrives at the interface of science and engineering, advancing technologies from bench-level prototypes to operational systems. SDL's QST team members specialize in:

- Proof-of-concept demonstrations
- Space environmental designs
- Optimized electronics

As a Department of Defense University Affiliated Research Center (UARC), SDL is uniquely positioned to solve problems in the interest of national security and science. Our relationship with AFRL shows that SDL is a trusted collaborator in nationally significant quantum technology programs.

RECENT CONCEPTS DELIVERED

- Optical Clocks
 - Optical Rubidium Atomic Frequency Standard (ORAFS)
- Navigation Sensors
 - Quantum Accelerometer-Extended Range (QuAc-ER)



The ORAFS system, a rubidium-based atomic clock.

AREAS OF EXPERTISE

- Atomic, molecular & optical (AMO) physics
- Quantum mechanics
- Photonics

TECHNOLOGIES

- Frequency combs
- Laser cooling
- Optical tweezers

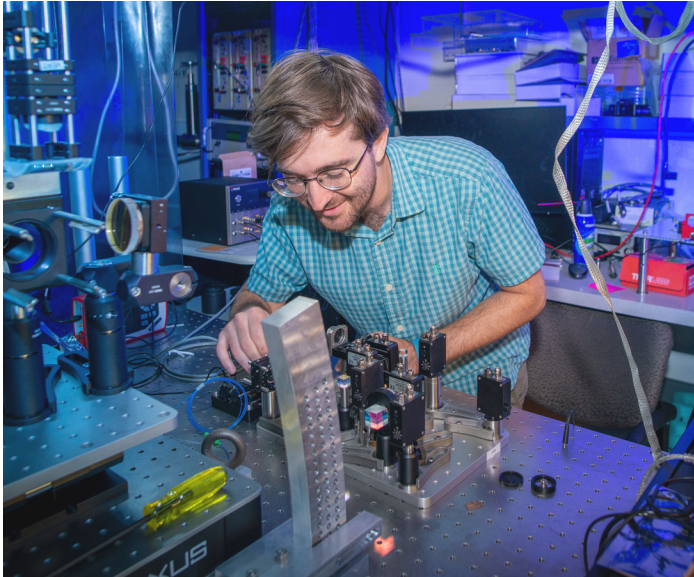
APPLICATIONS

- Clocks
- Accelerometers
- Time & frequency transfer terminals

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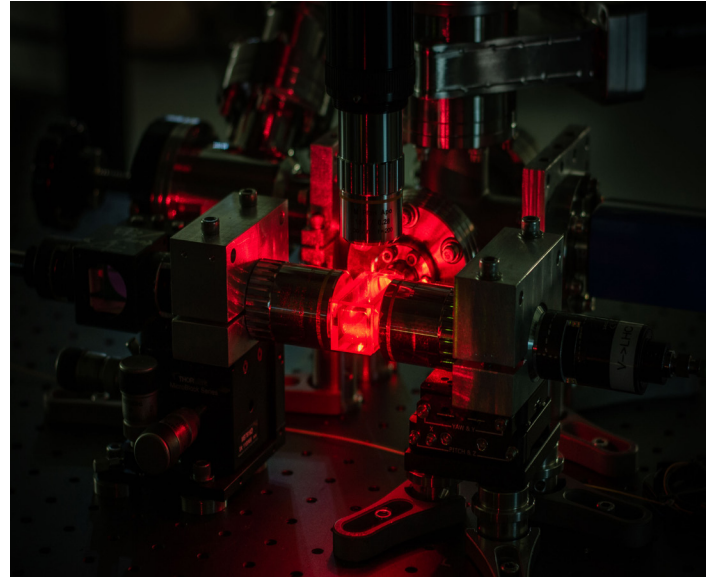
TECHNOLOGY INCUBATOR

SDL's scientists and engineers work alongside AFRL to realize quantum technologies.



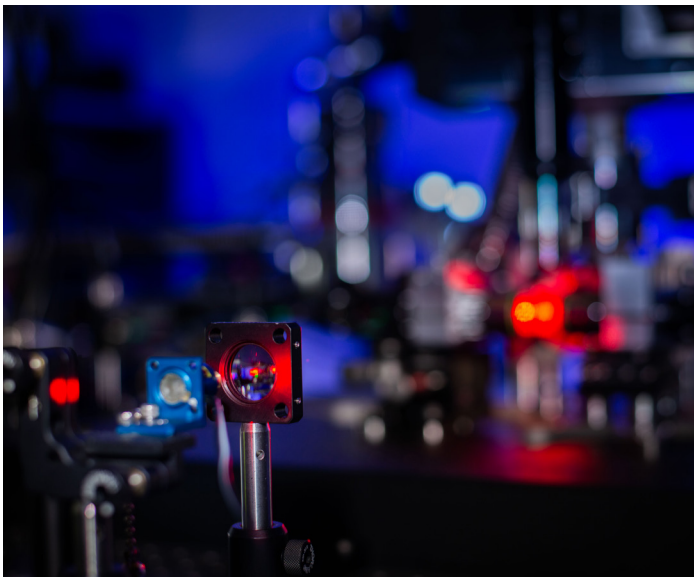
ADVANCED CONCEPTS

SDL develops integrated photonic solutions for accelerometers, time and frequency metrology, and inertial navigation.



MOVING TECHNOLOGIES FROM BENCHTOP TO ORBIT

SDL is establishing a legacy of prototyping and developing reliable, lower-cost navigation and timing solutions.



RESEARCH FOR NEXT-GENERATION SENSING & TIMING

SDL's research and patented innovations represent significant advancements in AMO physics.

