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**Modern Laser-Atomic Physics and Stable Oscillators for Real World Applications**

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This talk will consider how, when and where modern laser/atomic physics might play a significant role in real world applications. Advances in laser technology, control systems and precision laser spectroscopy are enabling many new capabilities for measurements and instrumentation, and can improve the performance of atomic clocks, magnetometers and inertial sensors by several orders of magnitude. Initial ideas of using lasers to enhance the performance of atom-based instruments dates back to the 1960s, and those early predictions were mostly well founded and have now been demonstrated, to varying degrees, in research laboratories and environments around the world. However, 40 years later, these promises have yet to be realized in industrial, governmental or commercial applications. As an example, the technology and performance (in terms of accuracy and stability) of commercially available atomic clocks has been rather stagnate since the 1970s, whereas those in research laboratories have continued to improve so that their performance is roughly 1000x better than the commercial frequency standards. We can, and should, ask why there is such a large gap between what is possible and what is commercially available? Reasons for the large disconnect in performance are multifold, and will be discussed. Atom-Optic Inertial sensors (gyros, accelerometers) are a more recent development and application that uses the same methods of laser atomic physics. Efforts are now underway to bring these atom interferometer inertial sensors to real world applications and commercial availability. Extremely stable microwave sources are another spinoff of precision laser technology and spectroscopy. It now appears that lasers may soon find their way into high performance commercial clocks and magnetometers and other instruments. However, our community has been making such promises and predictions for decades now...