


Physics
AT QUEENS COLLEGE

Colloquium Notice

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Optical microresonators with a widely tunable free spectral range

A widely tunable free spectral range (FSR) is a key requirement for many microresonator applications, yet it remains challenging to achieve on conventional monolithic platforms. In this talk, I present optical microresonators based on the Surface Nanoscale Axial Photonics (SNAP) platform, in which whispering-gallery modes are confined by nanoscale axial variations in an optical fiber. I review recent experiments demonstrating continuous and extensive FSR tuning – from sub-picometer to tens of picometers – using simple mechanical control, including fiber bending, relative translation, and milliradian rotation of intersecting straight fibers, while maintaining high Q-factors. These results are supported by a theory that maps SNAP microresonators onto an effective one-dimensional Schrödinger equation and coupled wave equations, enabling systematic design of the microresonator spectrum and profile with globally or locally constant FSR. Together, these results establish a flexible route to compact, mechanically reconfigurable microresonators for the realization of miniature tunable frequency comb generators, delay lines, photonic signal processors, and ultra-precise optical sensors.

Monday

May 11, 2026

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326

This talk is accessible via [Zoom](#) or use

meeting ID 829 2687 2594 and **passcode 866995** to join