**Title:** Maximal Subellipticity

**Abstract:** The theory of elliptic PDEs stands apart from many other areas of PDEs because sharp results are known for very general linear and fully nonlinear elliptic PDEs. Many of the classical techniques from harmonic analysis were first developed to prove these sharp results; and the study of elliptic PDEs leans heavily on the Fourier transform and Riemannian geometry.

Starting with work of Hörmander, Kohn, Folland, Stein, and Rothschild in the 60s and 70s, a far-reaching generalization of ellipticity was introduced: now known as maximal subellipticity or maximal hypoellipticity. In the intervening years, many authors have adapted results from elliptic PDEs to various special cases of maximally subelliptic PDEs.

Where elliptic operators are connected to Riemannian geometry, maximally subelliptic operators are connected to sub-Riemannian geometry. The Fourier transform is no longer a central tool but can be replaced with more modern tools from harmonic analysis.

In this talk, we present the sharp regularity theory of general linear and fully nonlinear maximally subelliptic PDEs.