

# VIRTUAL EAST-WEST SCV SEMINAR

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## SUBELLIPTICITY VIA AN UNCERTAINTY PRINCIPLE

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I am going to present a novel approach to the by-now-classical problem of establishing subelliptic estimates for the  $\bar{\partial}$ -Neumann problem on a finite-type pseudoconvex domain  $\Omega \subset \mathbb{C}^n$ . Despite very deep results on this problem (most notably by Kohn and Catlin) have been established several years ago, a clear understanding of the relationship between the sharp order of subellipticity and the local geometry of the boundary  $b\Omega$  still lacks.

Our methods rely on an "uncertainty principle for the  $\bar{\partial}$  operator" that I introduced a few years ago and certain holomorphic foliations in discs adapted to a plurisubharmonic function. We are able to determine the sharp order of subellipticity for homogeneous special domains in  $\mathbb{C}^3$ , a result that seems to be unattainable via Kohn subelliptic multipliers or Catlin potential theoretic methods. More general domains can be treated, but this is still work in progress. This is joint work with S. Mongodi (Universita Milano Bicocca).

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