**CHAO-MING LIN**, Ohio State University
*On the solvability of general inverse $\sigma_k$ equations*

In this talk, first, I will introduce general inverse $\sigma_k$ equations in Kähler geometry. Some classical examples are the complex Monge–Ampère equation, the J-equation, the complex Hessian equation, and the deformed Hermitian–Yang–Mills equation. Second, by introducing some new real algebraic geometry techniques, we can consider more complicated general inverse $\sigma_k$ equations. Last, analytically, we study the solvability of these complicated general inverse $\sigma_k$ equations.