2018 Taipei Conference on Geometric Invariance and Partial Differential Equations

Mini-Course: Jan.15-16

Venue: Lecture Hall, 6F

Institute of Mathematics, Academia Sinica, Taipei, Taiwan

Szego kernel in Complex and CR geometry

Chin-Yu Hsiao (Academia Sinica)

Jan.15 (Mon.) 9:00-10:30, 15:30-17:00
Jan.16 (Tue.) 13:30-15:00

Abstract
The Boutet de Monvel-Sjöstrand description of the Szegő kernel had a profound impact in many research areas: several complex variables, geometric quantization theory, complex and CR geometry. In this mini course, I will give an introduction to this result and I will sketch a heat kernel proof of Boutet de Monvel-Sjöstrand's result. As applications of Boutet de Monvel-Sjöstrand's result, we will deduce Tian-Yau-Zelditch asymptotic expansion for ample line bundles. I will also talk about my work about Szegő kernel asymptotic for general(0, q) forms and my work with Rung-Tzung Huang about G-invariant Szegő kernel asymptotic expansion.

Min-max theory for the area functional and applications

Fernando Marques (Princeton University)

Jan.15 (Mon.) 11:00-12:30
Jan.16 (Tue.) 10:30-12:00, 15:30-17:00

Abstract
In this minicourse I will discuss the Almgren-Pitts min-max theory and my work with Neves on the subject. This includes the proof of the Willmore conjecture, Morse index estimates and constructions of infinitely many minimal hypersurfaces settling Yau's conjecture for generic metrics. In particular, I will talk about the proof of the Weyl law for the Volume Spectrum and mention recent results about denseness/equidistribution of minimal hypersurfaces.

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