SCMS Seminar

GROTHENDIECK INEQUALITIES—FROM CLASSICAL TO NONCOMMUTATIVE

Speaker: Prof. Magdalena Musat

University of Copenhagen

Time: 15:30 p.m.-16:30 p.m., Friday, June 3, 2016
Venue: Room 2201, East Guanghua Tower (Main), Fudan University

Abstract: The highlight of Grothendieck's celebrated "Résumé", published in 1956, is a highly non-trivial factorization result for bounded bilinear forms on $C(K_1) \otimes C(K_2)$, where K_1 and K_2 are compact sets, which is now referred to as the Grothendieck Theorem (or, Grothendieck Inequality). The "Résumé"contains several equivalent formulations of it, all describing fundamental relationships between Hilbert spaces (e.g., L_2), and the Banach spaces L_1, respectively, $C(K)$, and L_1. It ends with a remarkable list of six problems, one of which is the conjecture that an analogue factorization for bounded bilinear forms on the product of (noncommutative) C*-algebras holds. This was later proven by Pisier (under an approximability assumption), and by Haagerup (in full generality).

I will survey Grothendieck's Inequalities, from classical to noncommutative, including extensions to the setting of completeley bounded bilinear forms on C*-algebras and operator spaces, due to Pisier-Shlyakhtenko, and joint work of Haagerup and myself. I will also explain connections with quantum information theory (related to reformulations of the Connes embedding problem).

Shanghai Center for Mathematical Sciences
22F East Guanghua Tower, No.220 Handan Road, Shanghai, China
Tel: 55665643 Fax: 65642190 Postcode: 200433 Email: scms@fudan.edu.cn