



**The Hong Kong Polytechnic University  
Department of Applied Mathematics**

## **Colloquium**

**Bottcher conjecture and related problems**

**by**

**Prof. Xiaoqing Jin**

**Department of Mathematics  
University of Macau**

Bottcher and Wenzel proposed a conjecture in 2005 as follows: the upper bound with the Frobenius norm of the commutator of any two  $n$ -by- $n$  real matrices  $X$  and  $Y$  is given by  $\|XY - YX\|_F^2 \leq 2\|X\|_F^2\|Y\|_F^2$

They also proved that the inequality is true for the case of  $n = 2$ .

In 2007, Laszlo proved the conjecture for the case of  $n = 3$ .

In this talk, we are going to prove the conjecture for general  $n$  and study some related problems.

**Date : 4 May, 2015 (Monday)**

**Time : 4:30p.m. – 5:30p.m.**

**Venue : TU717, The Hong Kong Polytechnic University**

**\* \* \* ALL ARE WELCOME \* \* \***