

数学与系统科学研究院

计算数学所学术报告

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报告题目:

**A Survey on the Bottcher and Wenzel  
Conjecture**

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报告时间: **2014 年 6 月 3 日 (周二)**

**上午 10:00-11:00**

报告地点: 科技综合楼三层 **311**

计算数学所报告厅

## **Abstract:**

A fundamental fact in matrix theory is that the matrix multiplication is not commutative, i.e., there are matrices  $X, Y \in M_n(\mathbb{C})$  such that  $XY \neq YX$ . The difference  $XY - YX$  is called the commutator (or Lie product) of  $X$  and  $Y$ . The commutator plays an important role in diverse areas in mathematics, for instance, Lie algebra and Lie group theory, perturbation analysis, and matrix manifold computation [Absil, Bhatia, Zhan]. Böttcher and Wenzel proposed the following conjecture in 2005 [BW1]: for any real matrices  $X, Y \in M_n(\mathbb{R})$ ,  $\|XY - YX\|_F \leq \sqrt{2} \|X\|_F \|Y\|_F$ , where  $\|\cdot\|_F$  is the Frobenius norm. This survey is concerned with stories around the proof of this conjecture and the study of its related problems.

欢迎大家参加!