

数学与系统科学研究院  
计算数学所网络学术报告

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报告题目:

**On integrability of the  $q$ -difference  
two-dimensional Toda lattice  
equation**

邀请人: 常向科 副研究员

报告时间: 2020 年 9 月 13 日 ( 周日 )

下午 16:00-17:00

报告工具: 腾讯会议 ( ID: 295 773 629 )

## **Abstract:**

As an important extension of integrable systems,  $q$ -difference integrable systems have been paid much attention. Various aspects of  $q$ -difference integrable systems have been revealed. In this talk, I will talk about the  $q$ -difference two-dimensional Toda lattice equation in particular. As a matter of fact, its bilinear form and determinant solutions have been investigated in literature. However, its Lax pair and other integrable properties remains unknown. By using determinant identities, I managed to construct its Backlund transformations. By taking one step further, we found the Lax pair to the  $q$ -difference two-dimensional Toda lattice equation. Based on the obtained Lax pair, Darboux transformations were constructed by which determinant solutions to the equation were recovered. Moreover, matrix integral solutions to the equation and its Pfaffinized equation were obtained too.

**欢迎大家参加！**