

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Bin Han**

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报告题目:

**Quasi-tight Framelets and
Generalized Matrix Spectral
Factorization of Multivariate
Polynomials**

邀请人: 许志强 研究员

报告时间: **2019 年 6 月 6 日 (周四)**

下午 15:00-16:00

报告地点: **数学院南楼七层**

702 教室

Abstract:

Wavelets and tight framelets have many applications. However, constructing compactly supported multivariate tight framelets is known to be a challenging problem because it is linked to sum of squares and factorization of multivariate Laurent polynomials in algebraic geometry. To circumvent this difficulty, we introduce the notion of quasi-tight framelets, which behaves almost identical to a tight framelet. From an arbitrary compactly supported multivariate refinable function (such as refinable box splines) with a general dilation matrix, we constructively prove that we can always derive a directional compactly supported quasi-tight framelet with vanishing moments. The key ingredient in constructing multivariate quasi-tight framelets is the generalize matrix spectral factorization of multivariate polynomials. This generalizes the famous one-dimensional matrix spectral factorization theorem (also called the Fejer-Riesz lemma) which is known to fail in high dimensions. This talk is based on [C. Diao and B. Han, Quasi-tight framelets with high vanishing moments derived from arbitrary refinable functions, Appl. Comput. Harmon. Anal., (2018), published online].

欢迎大家参加！