

## 一种基于多项式调和表示的拉普拉斯滤波核

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**摘要:** 滤波(卷积)是信号、图像处理常用的前端、后端处理步骤,对此提出了一种以多项式基线性调和表示子频谱段滤波的拉普拉斯滤波核的算法,用主向量分析法提取影响突出的子频谱段滤波,利用谱理论扩展频谱至连续无限尺度空间.实验结果表明,所提方法能够从拉普拉斯滤波中提取出多个代表性子频谱滤波,析取出子频谱段作用的特征频谱图像;与此同时,使用了四个评估标准以验证多项式表示的拉普拉斯滤波核与普通的拉普拉斯滤波核的一致性;最后的实验部分也验证了利用算法所表示的拉普拉斯滤波核可以用来反演滤波核.

**关键词:** 拉普拉斯滤波;子频谱段滤波;滤波核反演

## Laplace Filter Kernel Based on Harmonic

### Representation of Polynomials

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**Abstract:** The filter(convolution) commonly used in signal processing and image editing. In the paper, the sub-spectrum filter is represented by polynomial linear harmonic, and the principal components analysis was used to extracting influential sub-spectrum filter. This method expands the spectrum to continuously infinite number of dimensions by applying the approach which is known as spectral theory. The experiments showed that the proposed algorithm can extract multiple representative sub-spectrum filter, discrete the eigenimage (a 2D image which is affected by the sub-spectrum). At the same time, this paper uses the four evaluation criteria in order to verify that Laplace filter kernel polynomial is same as ordinary Laplace filter kernel. The last part of the experiment also proves that the algorithm can be used to recover filter kernel.

**Key words:** Laplace filter; sub-spectrum filter; inverting filter kernel

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