

李元勇 天津大学精密仪器和光电子工程学院 300072

摘要：本文依据是人类视觉信息的多通道多任务并行处理机制和对比度灵敏度函数，从空间频率的角度对灰度马赫带和彩色马赫带进行统一描述。利用log Gabor小波分析灰度马赫带的强度和局部能量以及空间频率的关系，发现当空间频率为1c/deg时，马赫带的强度最大，而随着空间频率的增大或减小，马赫带强度都会减小。同时在对彩色马赫带进行详尽实验的基础上，对比灰度对比度灵敏度函数，提出彩色对比度灵敏度函数。对比二者异同，将灰度马赫带和彩色马赫带的实验结论归结在空间频率的理论框架之中。

关键词：马赫带, log Gabor, 对比度灵敏度, 空间频率

文章全文为PDF格式，请下载至本机浏览。[[下载全文](#)]

如您没有PDF阅读器，请先下载PDF阅读器 [Acrobat Reader](#) [[下载阅读器](#)]

### Mach band effect based on the human vision mechanism

300072

Abstract: Based on the multi-channel, multi-task and parallel processing mechanism of human visual information and contrast sensitivity function, this paper presented a unified description of gray and color Mach band from the perspective of the spatial frequency. We used the log Gabor wavelet to analysis the relations among the strength of Mach band, local energy and spatial frequency of it, and found out that when spatial frequency is about 1c/deg, Mach band is strongest, and with the increasing or reducing of spatial frequency, local energy become smaller. At the same time, on the basis of detailed experiments of color Mach band, we proposed color a contrast sensitivity function in the inspired of gray contrast sensitivity function. Comparing with these similarities and differences between gray and color Mach band, we summarized them into the theoretical framework of spatial frequency.

Key words: Mach band, Log Gabor, CSF, Spatial frequency

[【大 中 小】](#) [[关闭窗口](#)]