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：

A Modulus Iteration Method for Retinex Problem

邀请人：　白中治 研究员

报告时间：**2021 年 10 月 9 日（周六）**

晚上 20:00-21:00

报告工具：腾讯会议 **ID：（162 312 985）**

Abstract:

Retinex theory was proposed by Land and McCann which manifests that the perception of object colors by human eyes is only dependent on the reflectance of the object and unrelated to illumination amount on the object. Image intensity recorded by digital cameras is the product of reflectance and illumination. The main purpose of retinex problem is to recover the reflectance from the recorded image just like human vision system. In this talk, we propose a variational minimization model with physical constraints imposed on reflectance values. We show that the proposed model is equivalent to a linear complementarity problem (LCP) and a modulus iteration method is applied to solve it. A large sparse linear system of equations arises in the modulus iteration method. By utilizing the special structure of the coefficient matrix, the solution of the linear system is obtained by solving a smaller linear system of only half of the unknowns. The convergence of the modulus iteration method for solving the LCP for the proposed model is also demonstrated. The experiments show that the convergence of the proposed method is much faster than the existing efficient methods for retinex problem and the proposed method is also competitive to the existing methods for retinex problem when considering recovered reflectance quality.

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