数学与系统科学研究院

计算数学所网络学术报告

报告人： **Dr. Wenbo Li**

（ Department of Mathematics, The University of Tennessee, Knoxville ）

报告题目：

Time fractional gradient flows: Theory and numerics

邀请人： 周爱辉 研究员

报告时间：2021 年 12 月 14 日（周二）

上午 **9:00-10:00**

报告工具：腾讯会议（**ID**：**429 389 218**）

Abstract：

We consider a so-called fractional gradient flow: an evolution equation aimed at the minimization of a convex and lower semicontinuous energy, but where the evolution has memory effects. This memory is characterized by the fact that the negative of the (sub)gradient of the energy equals the so-called Caputo derivative of the state. We introduce a notion of "energy solutions" for which we refine the proofs of existence, uniqueness, and certain regularizing effects. We generalize the "deconvolution" scheme for Caputo derivative to non-uniform time steps and obtain properties that allow us to develop a "fractional minimizing movements" scheme for the gradient flow problem. We derive an a posteriori error estimate and show its reliability. We also obtain a priori error estimates under different assumptions. All our analysis could be extended to the case where there are Lipschitz perturbations of the convex energy.

欢迎大家参加！