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：

Variational optimization on Lie groups

邀请人：　戴小英 研究员

报告时间：**2021** 年 **6** 月 **29** 日（周二）

上午 **9:30-10:30**

报告工具：腾讯会议 **ID:（754 489 815）**

Abstract:

Gradient Descent (GD) and its variations are optimization algorithms widely used in machine learning and other areas. This talk will describe how to add momentum to GD for optimization on Riemannian manifolds, with the focus being on a special subclass known as Lie groups. More precisely, we (joint work with Tomoki Ohsawa) will generalize the variational principle proposed by Wibisono et al. for vector spaces to Lie groups. Continuous dynamics that are guaranteed to converge to a local minimum will first be obtained. These dynamics correspond to dissipative mechanical systems, and they are the momentum versions of gradient flow on Lie groups. Then a particular case of SO(n) will be studied in details: the continuous dynamics will first be made explicit in coordinates, and then discretized in structure preserving fashions. The resulting optimization algorithms will remain exactly on the Lie group, demonstrate good performances, and many more pleasant properties will be discussed.

欢迎大家参加！