数学与系统科学研究院

计算数学所学术报告

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报告题目：

Theory of the Frequency Principle for General Deep Neural Networks

邀请人： 明平兵 研究员

报告时间：**2019 年 7 月 15 日（周一）**

下午 14:00-15:00

报告地点： 数学院南楼六层

602 教室

Abstract：

Along with fruitful applications of Deep Neural Networks (DNNs) to realistic problems, recently, some empirical studies of DNNs reported a universal phenomenon of Frequency Principle (F-Principle): a DNN tends to learn a target function from low to high frequencies during the training. The F-Principle has been very useful in providing both qualitative and quantitative understandings of DNNs. In this talk, we rigorously investigate the F-Principle for the training dynamics of a general DNN at three stages: initial stage, intermediate stage, and final stage. For each stage, a theorem is provided in terms of proper quantities characterizing the F-Principle. Our results are general in the sense that they work for multilayer networks with general activation functions, population densities of data, and a large class of loss functions. Our work lays a theoretical foundation of the F-Principle for a better understanding of the training process of DNNs.

欢迎大家参加！