中国科学院数学与系统科学研究院

应用数学研究所

华罗庚应用数学青年论坛

报告题目： Some Exact Formulas of the KPZ Fixed Point and Directed Landscape

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地　　点： **腾讯会议 181-572-088**

摘　　要： In the past twenty years, there have been huge developments in the study of the Kardar-Parisi-Zhang (KPZ) universality class, which is a broad class of physical and probabilistic models including one-dimensional interface growth processes, interacting particle systems and polymers in random environments, etc. It is broadly believed and partially proved, that all the models share the universal scaling exponents and have the same asymptotic behaviors. The height functions of models in the KPZ universality class are expected to converge to a limiting space-time fluctuation field, which is called the KPZ fixed point. Moreover, there is a random "directed metric" on the space-time plane that is expected to govern all the models in the KPZ universality class. This "directed metric" is called the directed landscape. Both the KPZ fixed point and the directed landscape are central objects in the study of the KPZ universality class, while they were only characterized/constructed very recentl. In this talk, we will discuss some exact formulas of distributions in these two random fields. These exact formulas are in terms of an infinite sum of multiple contour integrals, which are analogous to the Fredholm determinant expansions. We will show some surprising probabilistic properties of the KPZ fixed point and the directed landscape using the exact formulas. Some of the results are based on joint work with Yizao Wang and Ray Zhang.

个人简介： 刘志鹏在北京大学获得本科和硕士学位，在密歇根大学获得博士学位。曾在纽约大学柯朗所担任柯朗讲师，此后加入堪萨斯大学，先后担任助理教授和副教授。主要研究兴趣是可积概率论及一些随机增长模型背后的普适性以及极限定理，研究成果发表于 JAMS，CPAM，AOP，PTRF，CMP 等杂志。