

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: **Conformally invariant fields out of Brownian loop soups**

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时 间: 2023年3月29日(星期三) 下午 2:00--3:30

地 点: Zoom 会议号: 869 3063 0661

线下教室 N620

**摘 要:** For each central charge  $c \in (0,1]$ , we construct a conformally invariant field which is a measurable function of the local time field  $\mathcal{L}$  of the Brownian loop soup with intensity  $c$  and i.i.d. signs given to each cluster. This field is canonically associated to  $\mathcal{L}$ , in a sense which is similar to the isomorphism theory that associates the Gaussian free field to the loop soup with critical intensity. Isomorphisms between Brownian motions and random fields were previously developed by Symanzik, Brydges-Fröhlich-Spencer, Dynkin and Le Jan in several different settings. In a key intermediate step, we obtain the crossing exponent for the event that a cluster in the subcritical loop soup passes near a given point. Among other things, it allows us to deduce that the Minkowski gauge function of a cluster in a loop soup with intensity  $c \in (0,1)$ , which is  $t^2 f(t)$  for some  $f(t) = |\log t|^{1-c/2+o(1)}$ . I will also present several conjectures about this family of fields. This talk is based on joint works with Antoine Jego (EPFL) and Titus Lupu (CNRS).

**个人简介:** Wei Qian obtained her PhD in 2017 from ETH Zürich, under the supervision of Wendelin Werner. From 2017 to 2020, she was a Junior Research Fellow in Churchill College and Research Associate in University of Cambridge. From 2020 to 2022, she was a Chargé de Recherche in CNRS and Université Paris-Saclay. Wei Qian joined City University of Hong Kong in 2022. Wei Qian's research is focused on random two-dimensional geometry, and lies in the field of probability and mathematical physics.