北京大学量子材料科学中心

International Center for Quantum Materials, PKU

# Weekly Seminar

# Ferromagnetic quantum criticality


## Huiqiu Yuan

*Center for Correlated Matter and School of Physics, Zhejiang University*


**Time: 3:00pm, April. 20, 2022 (Wednesday)**

**时间：2022年4月20日 （周三）下午3:00**

**腾讯会议链接: https://meeting.tencent.com/dm/Gs1bfRMjdZRo**

**腾讯会议ID: 560-850-906**

## Abstract


In strongly correlated electron systems, a magnetic transition can be continuously suppressed to zero temperature upon applying a non-thermal parameter like pressure, magnetic field or doping, giving rise to a quantum critical point (QCP), around which unconventional superconductivity and non-Fermi liquid behavior may appear [1]. Over the past years, antiferromagnetic quantum criticality has been widely observed in various correlated systems. However, a ferromagnetic quantum critical point is usually avoided in a clean ferromagnetic system. Recently, we show clear evidence for a pressure-induced ferromagnetic quantum critical point and the associated strange behavior in the stoichiometric heavy fermion metal $CeRh_6Ge_4$ [2]. In this seminar, I will present our progresses on the studies of this compound, including the effect of pressure [2] and chemical doping [3], measurements of quantum oscillations [4], ARPES [5] and neutron scattering [6].



References:

[1] Z. F. Weng *et al.*, *Rep. Prog. Phys.* **79**, 094503 (2016).
[2] B. Shen *et al.*, *Nature* **579**, 51 (2020).
[3] Y. J. Zhang *et al.*, unpublished.
[4] A. Wang *et al.*, *Science Bulletin* **66**, 1389 (2021)
[5] Y. Wu *et al.*, *PRL* **126**, 216406 (2021)
[6] J. W. Shu *et al.*, *PRB* **104**, L140411 (2021)


## About the speaker

袁辉球，浙江大学物理系求是特聘教授、关联物质研究中心常务副主任。1999-2003年在德国马普固体化学物理研究所攻读博士学位，获德累斯顿工业大学理学博士，随后在美国伊利诺依大学香槟分校和拉斯阿拉莫斯国家实验室从事博士后研究工作，2008年回国，任职浙江大学。先后入选教育部长江学者特聘教授、国家万人计划创新领军人才、APS fellow。

袁辉球教授主要从事低温、高压、强磁场等综合极端条件下关联电子材料的奇异电子态研究，在重费米子物理、非常规超导、量子相变、强关联拓扑态等方面取得了系列创新研究成果。在Nature、Science等期刊发表学术论文150余篇；主持国家重点研发计划和基金委重点项目等十余个项目；在重要国际会议上做邀请报告90余次；组织了系列国际会议，担任SCES等国际会议的顾问以及SCPMA等7个国内外期刊的编委。