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凝聚态物理–北京大学论坛

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Challenges and perspectives of accelerator-based ultrafast electron diffraction and microscopy

向导 教授

时间：10月29日（星期四）15:00–16:30

地点：北京大学物理大楼中212教室

报告人简介：Prof. Dao Xiang (向导) was born in Sichuan in 1981. He received B.E. and Ph.d from Department of Engineering Physics in Tsinghua University. He was a staff scientist at SLAC National Accelerator Laboratory before joining Shanghai Jiao Tong University as a Professor of Physics. His research interests include particle accelerator physics, free-electron laser, advanced x-ray source, ultrafast electron diffraction and microscopy. He has authored about 80 papers in 'Reviews of Modern Physics', 'Nature Physics', 'Physical Review Letters', 'Physical Review Special Topics - Accelerators and Beams', etc. He received the 'US DOE Early Career Award' in 2012 and the 'Young Investigator Free-electron Laser Prize' in 2013.

摘要：Historically particle accelerators are instrumental for high energy physics (accelerator based colliders) and photon science (accelerator based synchrotron light sources and free-electron lasers). Now there is growing interest in applying accelerator technology to solve the grand challenges in probing matter at ultrafast temporal and ultrasmall spatial scales. In this talk I will discuss how one can use MeV electrons produced in accelerators (e.g. photocathode rf guns) to study ultrafast dynamics at atomic scale through ultrafast electron diffraction (UED) and microscopy (UEM) techniques. I'll focus on the principles and applications of UED and UEM. I will also report on the status of the MeV UED/UEM facility at Shanghai Jiao Tong University (SJTU) which is expected to provide access to new sciences by producing kHz rep-rate ultrafast and ultrabright electron beams that will give researchers unparalleled power and precision in examining the fundamental nature of matter.

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