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(宋怀航)

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## Polarized QED Processes in Laser Fields and Pulsar Fields

**Time:** 10:00-11:00, 13 June (Thursday), Shanghai time

**Venue:** N601 (TDLI)

**Host:** Longqing Yi

**Join Tencent Meeting:** <https://meeting.tencent.com/dm/XWb74wkkTB3W>

**Meeting ID:** 884346854

### Abstract:

QED processes play an important role when the field strength in the rest frame of electrons approaches the Schwinger limit. Such strong fields are available in high-power lasers, pulsars, and so on. In this seminar, I will discuss several QED processes in both laser fields and pulsar fields, mainly focusing on spin and polarization effects during gamma photon emission and pair production. I will show some of the similarities and differences between laser fields and pulsar fields in the strong-field QED regime. It is an open question how research on these two types of fields can be linked and inspired by each other (QED laboratory astrophysics?). My topic includes:

- (1) How to generate polarized electrons/positrons by ultra-intense lasers. [H.-H. Song et al. Phys. Rev. Lett. 129, 035001 (2022)]
- (2) Photon polarization of QED cascades over the polar cap of pulsars. [H.-H. Song et al. Mon. Not. R. Astron. Soc. 530, 2087 (2024)]

### Biography:

Huai-Hang Song is a postdoctoral of Key Laboratory for Laser Plasmas, Shanghai Jiao Tong University. He obtained his PhD from Institute of Physics, Chinese Academy of Sciences in 2022. His current research interests cover laser-plasma interactions, strong-field QED physics, plasma astrophysics, and particle-in-cell algorithms.

