

THE UNIVERSITY OF HONG KONG

DEPARTMENT OF PHYSICS

SEMINAR

**Ionized winds driven away from
supermassive black holes**

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Abstract:

Active Galactic Nuclei (AGN) are the observed manifestation of inflow of matter onto supermassive black holes. Ionized winds driven away from black holes have also been observed, which might play an important role in the evolution of black holes and their host galaxies. In the X-ray band, three types of ionized winds have been observed so far. First, classical warm absorbers are identified with multiple narrow absorption lines with a typical outflow velocity of a few hundreds of km/s. Second, ultrafast outflows with an outflow velocity up to a quarter of the speed of light are inferred from highly ionized Fe absorption lines in the hard X-ray band. Third, in the past few years, obscuring winds have been reported in a few Type 1 AGN. The putative disk wind leads to a pronounced flux drop in the soft X-ray band. It can last for several weeks or years. Contemporaneous observational features found in the NIR to UV bands might be associated with the soft X-ray obscuration. The next generation of high-resolution X-ray spectroscopy will significantly improve our general understanding of ionized winds.

Biography:

Dr. Junjie Mao is currently an Associate Professor at the Department of Astronomy (DoA), Tsinghua University. Before joining DoA in 2022, he was an Assistant Professor at Hiroshima University in Japan (2021-2022) and a Research Associate at the University of Strathclyde in the UK (2018-2021). He obtained his Ph.D. degree at Leiden University (Leiden Observatory) and SRON (Netherlands Institute for Space Research) in the Netherlands in 2018. His research interest revolves around high-resolution spectroscopy of astrophysical plasmas, including ionized winds driven away from supermassive black holes, elemental abundances of the hot plasmas of individual galaxies and galaxy assemblies, development of plasma models and atomic databases.

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