

**THE UNIVERSITY OF HONG KONG**

*DEPARTMENT OF PHYSICS*

*RESEARCH SEMINAR*

# **A short review of prospects of measuring relativity in galaxies**

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Abstract:

Black holes and cosmic expansion are not the only settings for relativity to play a role in astronomy. Galaxies are always dressed with a dark halo of uncertain nature, possibly involving modification of General Relativity and the so-called cosmological "constant". I discuss some evidences for relativistic physics in galaxies and galaxy clusters and future measurements in light of the Chinese Space Station Space Telescope (CSST), FAST, DAMPE, Taiji and Tianqin etc facilities. Such measurements are important technological achievements and could help to clarify if black holes and galaxies are dressed with extra fields.

Biography:

Prof. Hongsheng Zhao is a specialist in dark matter and modified gravity physics. He started his career from a TD Lee program to study in Columbia University and did a PhD with David Spergel and Mike Rich on a first orbit and microlensing model of the Milky Way bar, and then did his postdoc on galaxy modeling with Simon White in Max Planck Institute for Astrophysics and Tim de Zeeuw in Leiden Observatory, then he was awarded the Particle Physics and Astronomy Research Council Advanced Fellow in Cambridge University 2002, and became a tenured professor at University of St Andrews, and visiting professors in Oxford, Cambridge, Princeton, NAOC and several other research centers, and was awarded the Gutenberg Chair professor at Strasbourg University. His publications (Google h-index=56) range from standard dark matter dynamics lensing and annihilations in galaxies and substructures to modified dark energy and theories of gravity. He is most known for the Zhao (1996) model for dark halo dressed black holes and galaxies and his work in MOND-related stellar dynamics and cosmology.

**Tuesday, April 21, 2026, 3:00pm**

Room 522, 5/F, Chong Yuet Ming Physics Building, The University of Hong Kong

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