引力波与宇宙学实验室 讲座预告

# Probing Primordial Black Holes with X/gamma-rays


## 谭秀慧 (理论物理研究所)

谭秀慧于中国科学院高能物理研究所、及意大利都灵大学分别获得粒子物理与原子核物理和天体物理学的博士学位。曾在北京师范大学天文系从事博士后工作，目前在理论物理研究所担任助理研究员。主要研究方向为暗物质间接探测、宇宙学大尺度结构和多波段天文学。



**Abstract**

Primordial black holes (PBHs) remain viable candidates for dark matter in few mass windows, offering avenues for exploration through various electromagnetic data. Utilizing X/gamma-rays, we probe the PBH signals by correlating their Hawking Evaporation in the MeV energy range with the cosmic microwave background lensing effect. Additionally, we reevaluate the constraints on PBHs through a comparative study of the cosmic X-ray background (CXB). Our analysis identify previously overlooked radiation processes across the relevant energy bands, potentially enhancing the constraints on PBHs. These processes encompass direct emission from Hawking radiation, in-flight annihilation, the final state of radiation, and positronium annihilation. We establish the most stringent constraints on PBHs within the asteroid mass range and predict their limits through simulations of future experiment sensitivity.


**时间：　2024年10月16日 (星期三) 10:00**

**地点：　北京师范大学物理楼402**