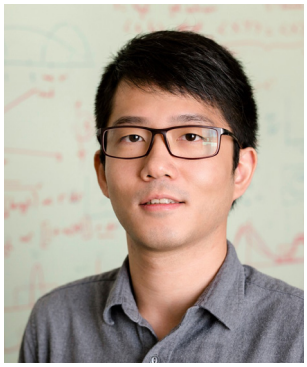
NPA Seminar

Wright Laboratory

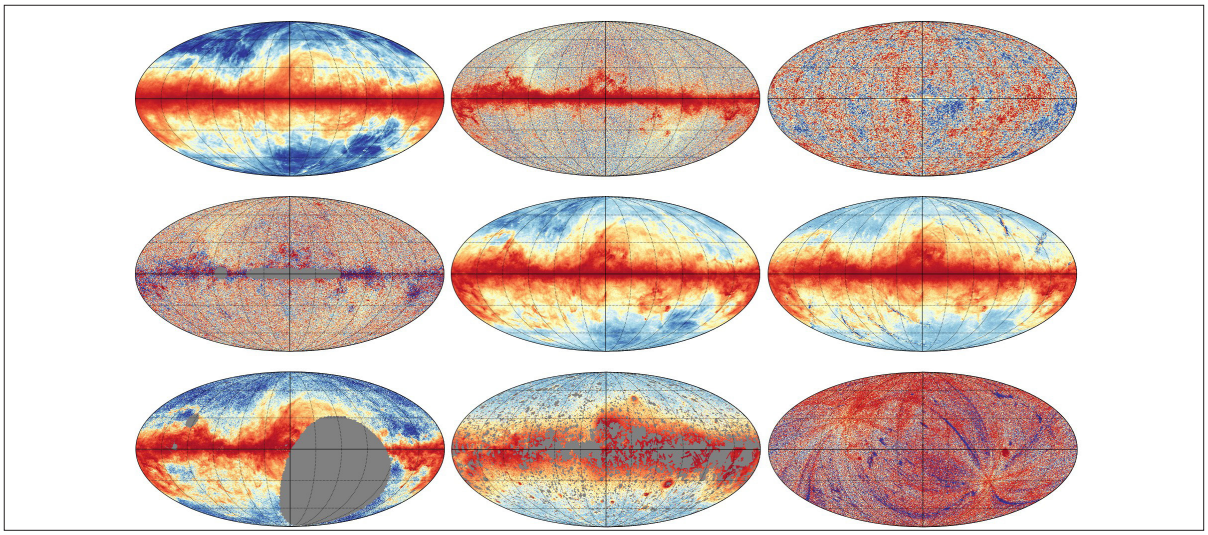


Yi-Kuan Chiang

Johns Hopkins University

January 23, 2020 at 1:00 p.m. in WL-216

How Bright Is the Universe? Intensity Mapping Tomography in Broadbands



The universe produces radiation at all wavelengths throughout the epoch of galaxy formation. Over the past three decades, wide-field imaging surveys of the sky have been performed over 18 orders of magnitude in frequency from radio to gamma-ray. However, photons from the 3D cosmic web are all projected on the 2D sky, together with any Galactic foreground emission that might be present in a given waveband. In this talk, I will introduce a clustering-based intensity mapping tomography technique to statistically recover the line-of-sight information for photons emitted in the cosmic web. We demonstrate this technique with data using 10 intensity maps from GALEX, IRAS, and Planck to probe the mean cosmic UV background, cosmic IR background, and the cosmic Sunyaev–Zeldovich effect background originated from different sources in the large-scale structures over cosmic time. These results have set important constraints on the star formation and thermal history of the universe.

Hosts: Ben Saliwanchik, Laura Newburgh

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