APR20-2020-020235

Abstract for an Invited Paper
for the APR20 Meeting of
the American Physical Society

Intensity Mapping: a New Tool for Dark Matter (and more)

ANTHONY PULLEN, New York University

Line intensity mapping (LIM), in which line emission from unresolved galaxies is mapped onto a 3D field, has emerged as a unique probe of both the gas content and star formation history of the Universe as well as large-scale structure across cosmic time. In this talk I will discuss the science potential of LIM with a focus on dark matter (DM) science. I will begin with a brief introduction to LIM and the various emission lines that are being considered for tracers of large-scale structure. Next I will give a status update on both efforts to model and constrain line luminosities using current data and LIM surveys that will soon be operational. Finally, I will present how we hope to constrain properties of DM through LIM, particularly through searching for signatures of DM decays or annihilations in line intensity maps as well as isocurvature perturbations through 21 cm power spectra.