

---

# [CII] Intensity Mapping with SuperSpec: Deployment Update and Prospects for Future Large-Scale Instruments

Kirit Karkare\*<sup>1</sup>

<sup>1</sup>University of Chicago – United States

## Abstract

Intensity mapping with the [CII] 158 um fine-structure line is a promising probe of luminous structure at high redshift. Future maps of the large-scale fluctuations in this line can be cross-correlated with HI, illuminating the physics of the reionization process, and will eventually be a powerful tool for cosmology. But while several pilot instruments plan to measure [CII], it is difficult to improve their sensitivity by the orders of magnitude necessary for high-fidelity mapping. The SuperSpec on-chip mm-wave spectrometer is a novel technology that shrinks the spectrometer to a few square cm of silicon, and will enable next-generation focal planes with CMB-like detector counts. I will describe the spectrometer architecture and our initial deployment to the Large Millimeter Telescope, slated for May-June 2019 (and will hopefully present first-light results!). I will then discuss the prospects for scaling up to hundreds of pixels and the intensity mapping science that will be enabled by filled SuperSpec focal planes in the next few years.

---

\*Speaker