Abstract Submitted
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Mapping the Invisible: 21-cm intensity mapping with the Tianlai Array[1] LILY ROBINTHAL, Evergreen State Coll — 21-cm intensity mapping is a new method of mapping the universe using the 21-cm spectral line of neutral hydrogen. Because hydrogen is so prevalent in the universe, this method allows astronomers to image large swaths of the universe and periods from before stars were formed in the radio region of the electromagnetic spectrum, as well as compare to optical surveys. This can ultimately be used to investigate the large-scale structure of the universe, and to study dark energy. I am modeling optical data from a spectroscopic galaxy redshift survey of the North Celestial Cap. This data will be compared to 21-cm data of the same region from the Tianlai Array, a new 21-cm survey. I am also working with data from the Arecibo Legacy Fast ALFA (ALFALFA) survey, a different 21-cm survey, which can be correlated with optical data from the Sloan Digital Sky Survey. This will give us a sense of how the optical survey of the NCC will compare to the Tianlai survey. This work was supported by the National Science Foundation's REU program in Astrophysics through NSF award AST-1852136.

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