Award Abstract #1616554

Large Scale Intensity Mapping of Neutral Hydrogen in the Universe with the Tianlai Pathfinders

NSF Org:	**AST** **Division Of Astronomical Sciences**
Initial Amendment Date:	August 12, 2016
Latest Amendment Date:	August 12, 2016
Award Number:	1616554
Award Instrument:	Continuing grant
Program Manager:	Richard E. Barvainis AST Division Of Astronomical Sciences MPS Direct For Mathematical & Physical Scien
Start Date:	August 15, 2016
End Date:	July 31, 2019 (Estimated)
Awarded Amount to Date:	$289,536.00
Investigator(s):	Peter Timbie pttimbie@wisc.edu (Principal Investigator) Albert Stebbins (Co-Principal Investigator)
Sponsor:	University of Wisconsin-Madison 21 North Park Street MADISON, WI 53715-1218 (608)262-3822
NSF Program(s):	EXTRAGALACTIC ASTRON & COSMOLO
Program Reference Code(s):	1207
Program Element Code(s):	1217

ABSTRACT

This program will develop new analysis methods for current and upcoming cosmological hydrogen 21cm intensity mapping data from the Tianlai experiment, located in a radio quiet area of Western China. Such mapping provides important clues to the evolution of gas and galaxies in the early universe. Broader impacts include training of undergraduate students and postdocs, and development of inexpensive radio telescopes at Fermilab and UW-Madison using new software-defined-radio techniques for use by high-school and college students, through the NSF/DOE QuarkNet program.

The experiment will measure the three dimensional large scale structure of the universe via hydrogen emission from distant galaxies. The primary goal is to develop ways to handle the large foreground signal, which has been previously quantified in a path-finder 21cm program conducted on NSF's Green Bank Telescope.

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