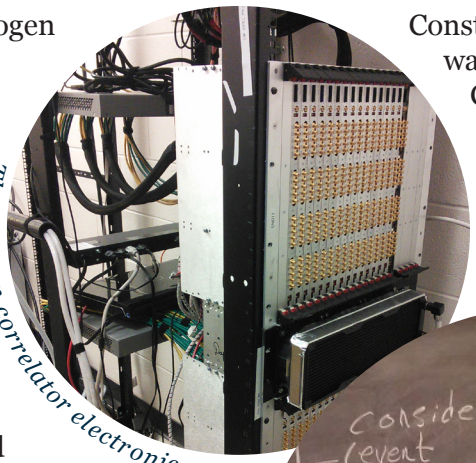
Canadian Hydrogen Intensity Mapping Experiment

Canadian Hydrogen Intensity Mapping Experiment (CHIME) is a new radio interferometer located at the Dominion Radio Astrophysical Observatory (DRAO) in British Columbia. At the McGilll Space Institute, **Prof. Matt Dobbs**, **Prof. David Hanna** and **Prof. Vicky Kaspi** are involved with CHIME along with nearly 2 dozen McGill students, postdoctoral fellows and technicians

CHIME will map the 21 cm emission of neutral Hydrogen from redshifts 0.8 to 2.5 culminating in the largest-volume survey of the distribution of matter in the Universe ever made. This redshift range encompasses the critical period when Dark Energy becomes comparable to the energy density of matter and drives the late accelerated expansion of the Universe.



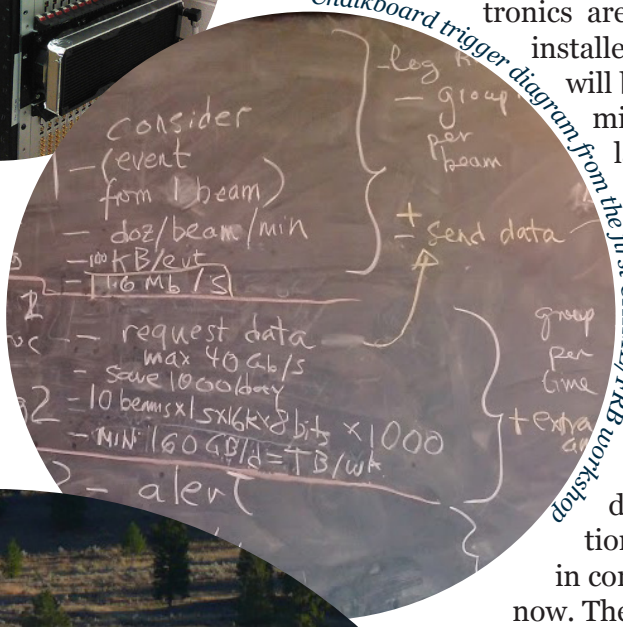
The custom correlator electronics

The survey will allow the team to measure the expansion rate of the Universe through this critical epoch, thus helping to constrain the Dark Energy equation of state. In addition, the CHIME telescope will be a powerful instrument to detect Fast Radio Bursts.

A separate back-end processor to perform the high-cadence de-dispersion has recently been funded by the CFI.

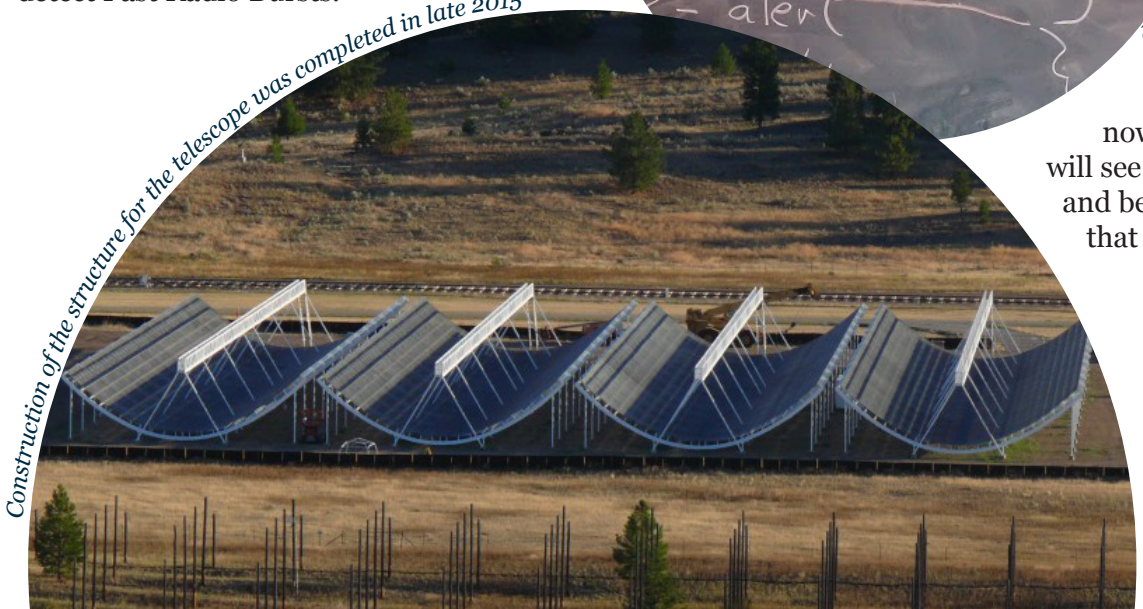
CHIME will also act as a scientific and technical pathfinder for the Square Kilometre Array (SKA), pioneering the measurement of very low-surface brightness phenomena and developing key correlator hardware.

Construction of the structure for the telescope was completed in late 2015. At 8,000 m², CHIME is now the largest telescope in continental North America with 2% more collecting area than the Green Bank telescope.



Chalkboard trigger diagram from the first CHIME/FRB workshop

The custom correlator electronics are now being installed on site and will be commissioned in late 2016. It will be the world's largest radio correlator. The analog chain, including the 1024 dual-polarization feeds, are in construction now. The telescope will see first light in 2017 and be commissioned that year.



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