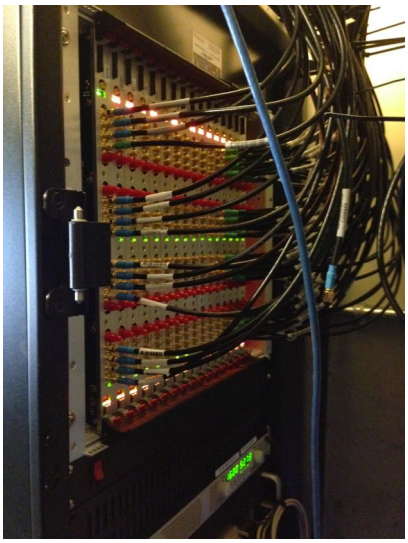
$23M New funding to build revolutionary Canadian radio telescope



Canada has emerged as a world leader in radio astronomy due, in part, to the game-changing, Canadian Hydrogen Intensity Mapping Experiment (CHIME) which has become the world's foremost facility for detecting and understanding fast radio bursts (FRBs) and is currently mapping the large scale structure in the universe.

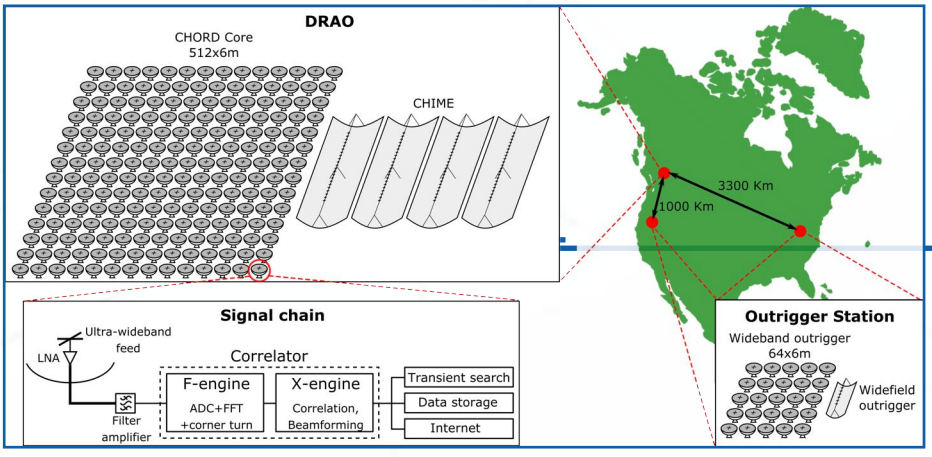
A pan-Canadian team including McGill Space Institute faculty Prof. Cynthia Chiang, Prof. Matt Dobbs (project Director), Prof. Daryl Haggard, Prof. Vicky Kaspi, Prof. Adrian Liu, and Prof. Jon Sievers was recently awarded $23M funding from the Canadian Foundation for Innovation to design and build the Canadian Hydrogen Observatory and Radio-transient Detector (CHORD).

CHORD offers unprecedented observational capabilities, from real-time sub-arcsecond transient localization, to a higher wideband mapping speed than any telescope currently operating. This world-leading facility will allow Canadian astronomers to address three of the most exciting areas in physics today: (1) elucidating the nature of fast radio bursts and their precise location within galactic hosts; (2) mapping the distribution of matter on cosmic scales to reveal the evolution of structure in the Universe; and (3) probing fundamental physics parameters, such as testing General Relativity.

CHORD will build directly on CHIME's success. While CHIME was a discovery machine, breaking new ground in telescope design and unlocking a new class of observations, CHORD will be a precision observatory, honing in on the details of the complicated cosmology and astrophysics that govern the physics of the universe and compact objects like FRBs.

CHORD will leverage advances in digital and radio-frequency technologies to study the transient and cosmic-radio sky in previously impossible ways. This next-generation instrument will build on the team's revolutionary digital correlator technology developed for CHIME, alongside new wideband technologies and National Research Council investment in cutting-edge composite reflectors. CHORD will deliver an order-of-magnitude increase in wide-band survey speed and increase the bandwidth by a factor of three.

Construction of CHORD will begin in 2022 with first observations in 2024.



From top: A CHIME-like correlator forms the heart of the complex signal processing for CHORD; a prototype CHORD dish, half the diameter of the full design, built in 2019/2020 and tested on sky for performance; overview of the CHORD instrument.