CIRADA
The Canadian Initiative for Radio Astronomy Data Analysis (CIRADA) is a $10M program intended to create sophisticated new software products and catalogues for studying the sky at radio wavelengths. In 2022, CIRADA released an image cut-out server for the new Rapid ASKAP Continuum Survey (RACS), new software to efficiently correct radio data for ionospheric Faraday rotation, and new standardized formats and associated toolkits for sharing radio polarization data. In 2023, we will produce science-ready products for the first full data sets from the Very Large Array Sky Survey (VLASS), and will release sky-monitoring data, polarization maps and absorption spectra produced by the Canadian Hydrogen Intensity Mapping Experiment (CHIME).

SUPERBIT
Through 2022, SuperBIT has been preparing to launch a super-pressure balloon in the Spring of 2023 from Wanaka, New Zealand, for a 100-night flight at 35 km above sea level. On this mission, SuperBIT will measure the dark matter distribution of 100 galaxy clusters, allowing us to better understand the nature of dark matter and dark energy in the Universe. Through this past year, the SuperBIT team has been taking part in the pre-flight instrument integration campaign at the NASA Columbia Scientific Balloon Facility in Palestine, Texas.

DRAGONFLY
In 2022, the Dragonfly team completed 70% of its ultrawide survey, which will map out the full footprint of the Sloan Digital Sky Survey when complete. A large expansion to the array called the Dragonfly Spectral Line Mapper (DSLM) is currently underway, consisting of an additional 120 lenses with ultra-narrow bandpass filters. Currently 10 out of 120 lenses of DSLM are on sky, with the commissioning of the first of four 30 lens arrays upcoming. In 2022, the team wrote three papers on Ultra Diffuse Galaxies, one paper on the stellar halos of the Dragonfly Edge-on Galaxies Survey, and three SPIE proceedings on the DSLM and Dragonfly instrumentation.

WHAT WE STUDY
At Dunlap, we design and build innovative technology like telescopes, spectrographs and supercomputers. We pursue groundbreaking astronomical research using these facilities. We also provide world-class training to students, and run science and astronomy outreach events to engage the public across the Greater Toronto Area and beyond.

WHO WE ARE
The Dunlap Institute for Astronomy & Astrophysics at the University of Toronto is an endowed research institute with over 80 faculty, students, postdocs, and staff.

OUR TECHNOLOGY
SuperBIT
Dragonfly
CIRADA
WHAT WE DO
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OUR COMMITMENT
The Dunlap Institute is committed to making science, training, and outreach productive and enjoyable for everyone.

JOIN US!
Please visit our website or check us out on social media to find out more about what's going on at Dunlap!
OUR RESEARCH

In 2022, our astronomers made some outstanding discoveries in the field of astronomy. Some of the most profound research results this year came from data collected from the James Webb Space Telescope. Using the telescope’s first Deep Field image, Mowla, Iyer, and their team embarked on a mission to find some of the universe’s first stars. They found a distant galaxy that offers a glimpse into the galaxy’s early stages. Their research was published in September, 2022 in The Astrophysical Journal Letters.

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OUR TRAINING

In 2022, new Associated Faculty member Josh Speagle joined as co-chair of the Training and Mentoring Committee, and the committee has grown to include several partners and the presentation of the work to an independent expert review committee. We are excited to bring students back to Toronto and to give them hands-on experience. We anticipate the return of the in-person Dunlap Instrumentation Summer School. The Summer School provides a platform for students to gain practical experience in the field of astronomy and to network with other students and professionals in the industry. It is an excellent opportunity for students to learn about the latest research and technologies in the field and to build their professional skills.

OUR OUTREACH

In 2022, we released 16 videos, and plan on continuing to release them on a bi-weekly schedule. Our monthly Astro Trivia nights, streamed live to YouTube, continue to attract a loyal audience. We have also refined some of our online outreach activities developed during the pandemic, in order to reach a wider audience beyond the Greater Toronto Area.

OUR RESEARCH

Our researchers have produced breakthrough results in the past proposal that is now under review. Our astronomers seek to reintroduce our first in-person event in three years — dubbed as such because of the sparkling round of applause that marks the beginning of a new era. We have recently welcomed some outstanding new hires working on infrared spectrographs. GIRMOS, Dragonfly and SuperBIT have all also made exciting discoveries in the coming year!

Professor Bryan Gaensler, who is the chair of the Dunlap Research Board, has completed 14 years on stellar streams, fast radio bursts, and globular clusters. His research has consolidated our leadership in the CHIME and CHORD projects. Our other flagship instrumentation projects such as GIRMOS, Dragonfly and SuperBIT have all also made exciting new discoveries.

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