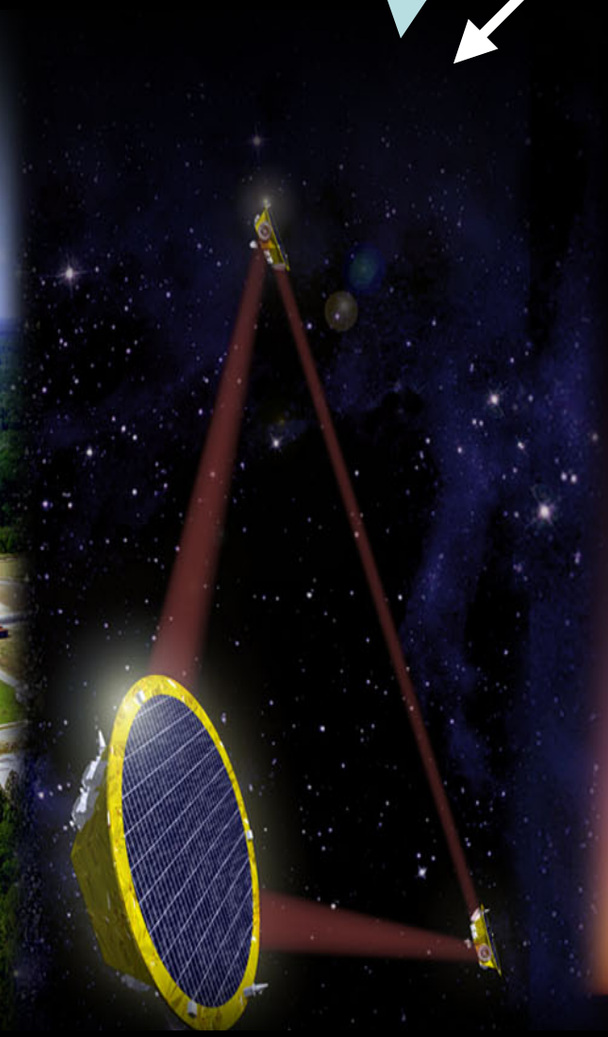
UBC DEPARTMENT OF PHYSICS ASTRONOMY

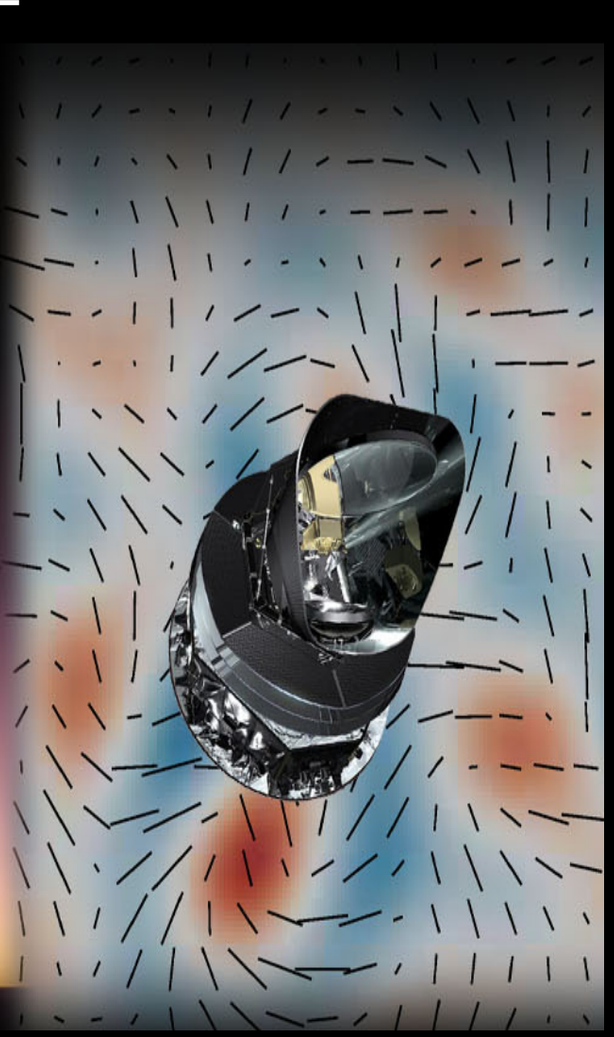
TRIUMF

LIGO

LISA

PTAs
CHIME

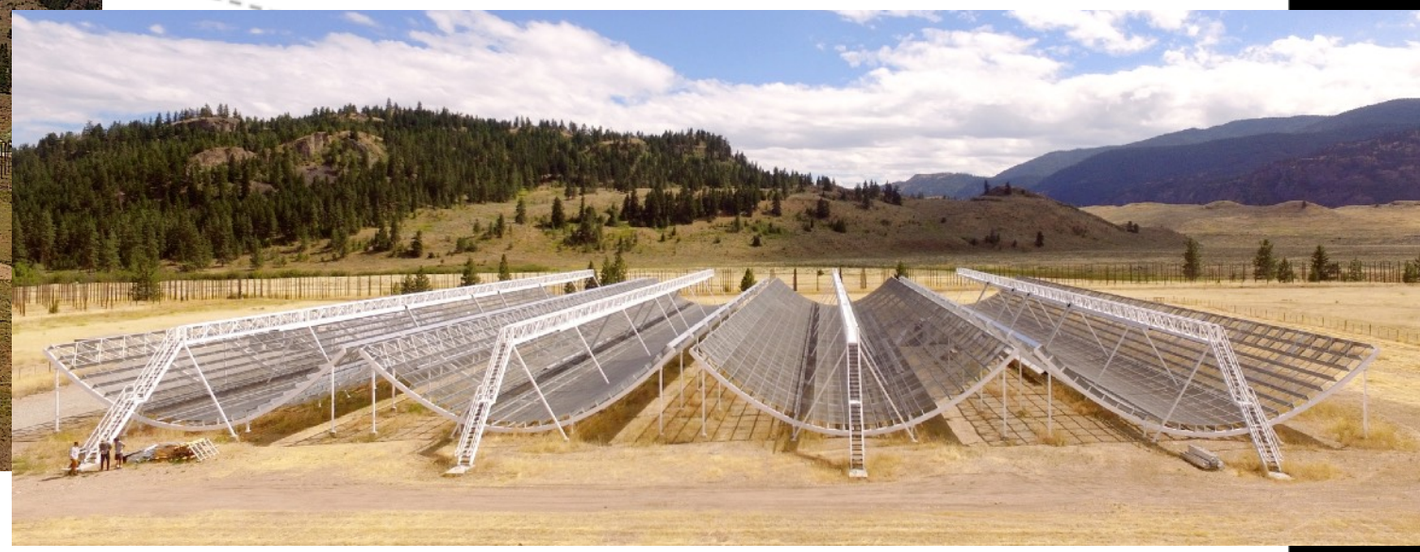




Gravitational Wave Periods

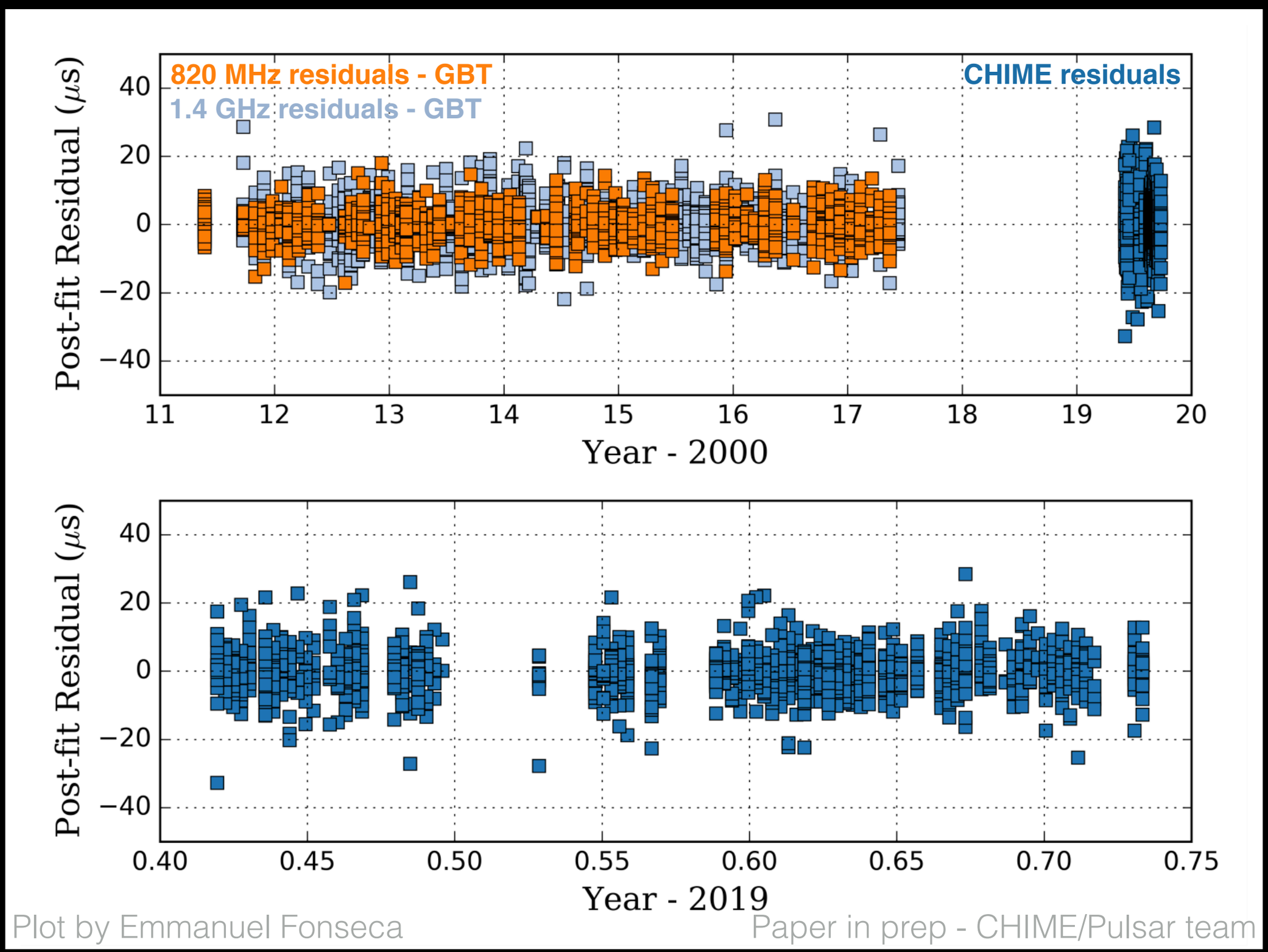
Update from the CHIME/pulsar team

(Courtesy of Ingrid Stairs, Mark Halpern, et al. at UBC)



Photos by the CHIME collaboration

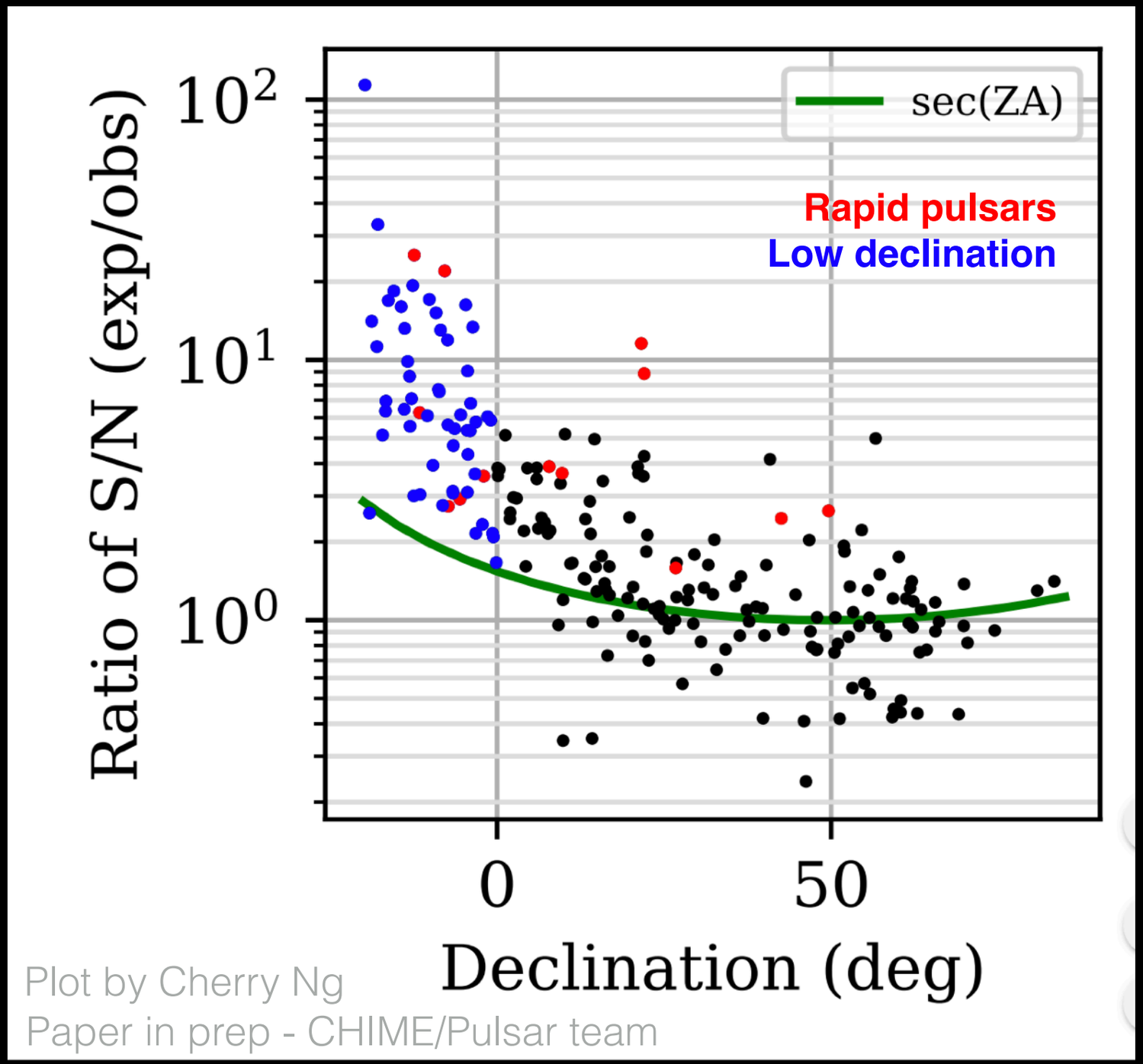
NANOGrav and CHIME/Pulsar observations of PSR J0645+515



Plot by Emmanuel Fonseca

Paper in prep - CHIME/Pulsar team

Update from the CHIME/pulsar team



Plot by Cherry Ng
Paper in prep - CHIME/Pulsar team

Measured SNR is as expected for hundreds of Galactic pulsars, measured with a daily cadence

UBC has joined the LIGO Scientific Collaboration

lsc.ubc.ca

The LIGO group at UBC

Home | About the UBC LIGO Group | Get Involved | Publications

UBC researchers visit LIGO Livingston

UBC researchers Jess McIver, Evan Goetz, and student Katie Rink visited the LIGO-Livingston detector in Livingston,

About the LIGO group at UBC

UBC is now part of the LIGO Scientific Collaboration.

Senior LSC members at UBC include:

- Jess McIver (UBC Physics & Astronomy)
- Evan Goetz (UBC Physics & Astronomy)
- Curtis Berlinguette (UBC Chemistry)
- Minkyun Noh (UBC Mechanical Engineering)
- Joerg Rottler (UBC Physics & Astronomy)
- Jeff Young (UBC Physics & Astronomy)
- Ke Zou (UBC Physics & Astronomy)

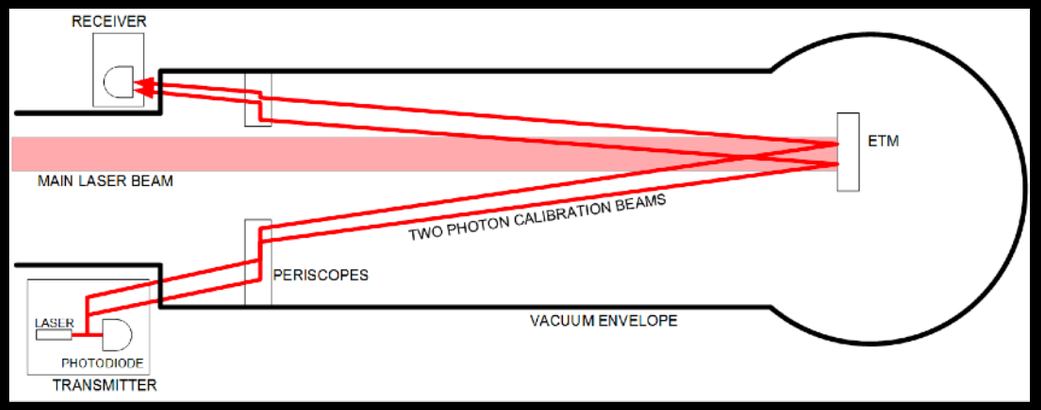
Updates to come soon!

Recent Updates

- Discovery of the heaviest neutron star, or lightest black hole, ever observed
- UBC researchers visit LIGO Livingston
- Glimpsing harmonics in gravitational waves
- GW190425: detecting the second merger of two

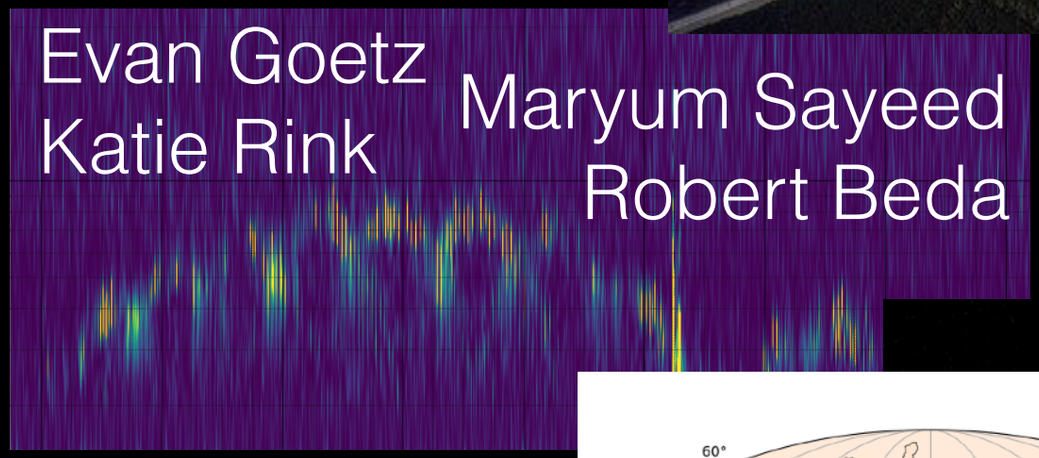
The (LIGO-band) GWs group at UBC

Evan Goetz

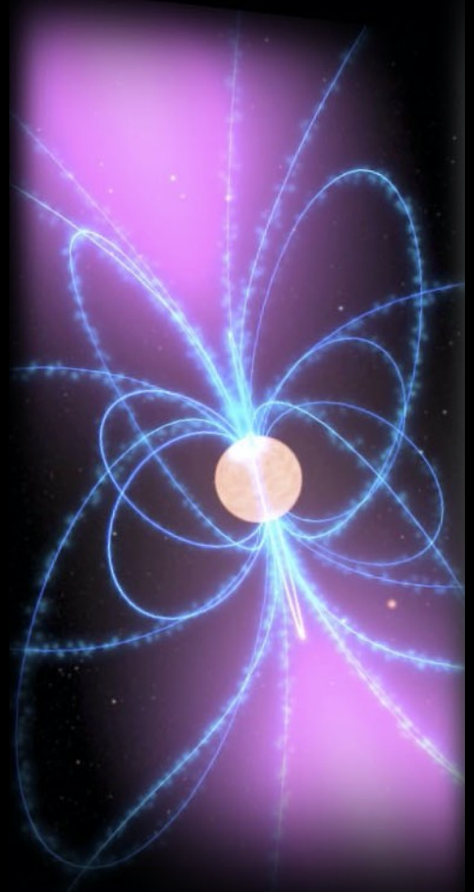


Evan Goetz
Katie Rink
Robert Beda

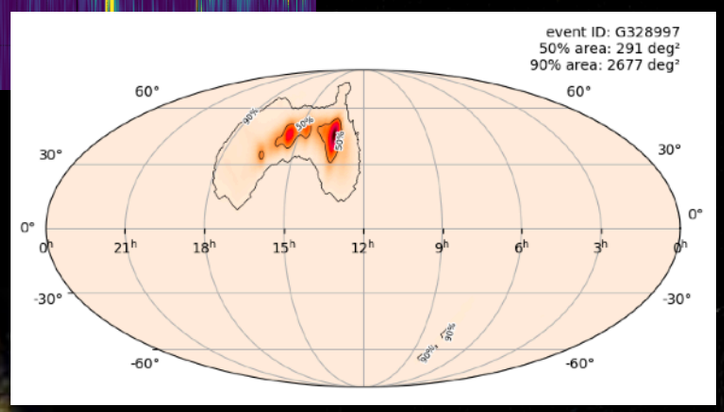
Evan Goetz
Katie Rink
Maryum Sayeed
Robert Beda



Evan Goetz

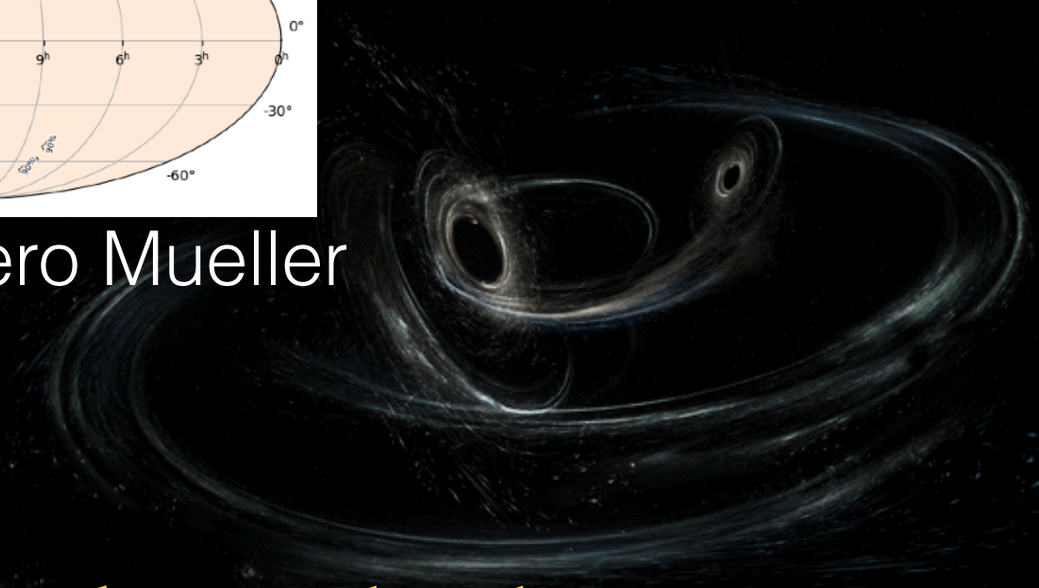


Nayyer Raza



Miriam Cabero Mueller

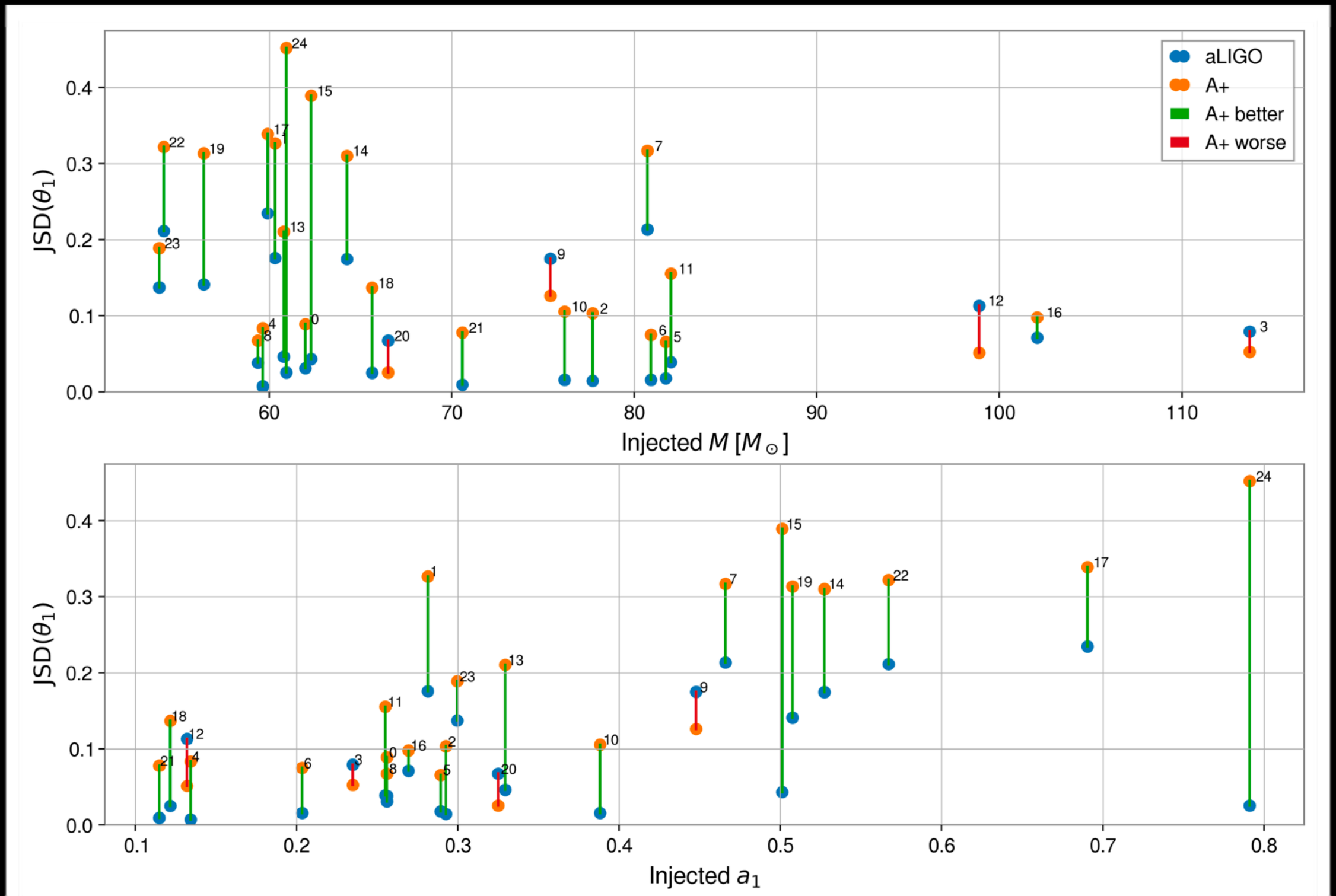
Miriam Cabero Mueller
Alan Knee
Maryum Sayeed



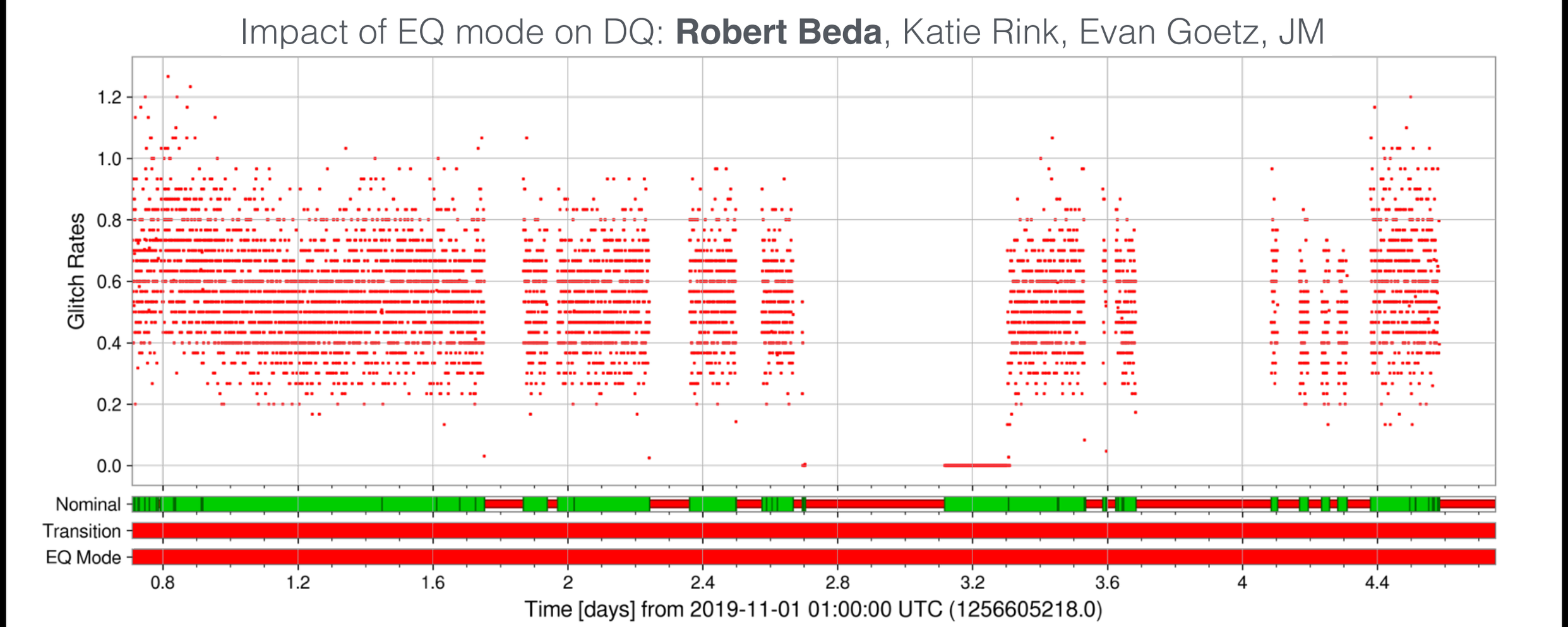
gravitational-waves.phas.ubc.ca

How much better can we resolve spin tilt with A+?

Alan Knee, Miriam Cabero Mueller, JM



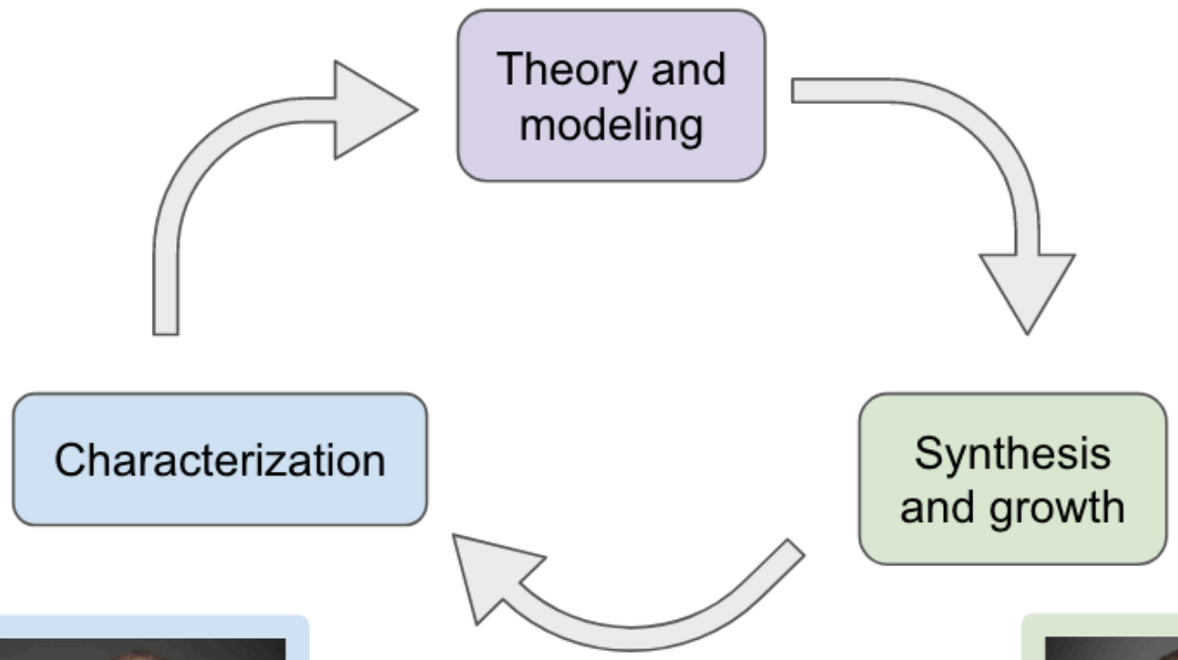
Post-run LIGO detector characterization



UBC's GW detector coating team

Exploring optic coatings for ground-based GW detectors beyond Advanced LIGO (Voyager, Cosmic Explorer, Einstein Telescope).

Jess McIver, leader of the LIGO detector characterization effort, will co-liaise with the LIGO collaboration and GW community.



Joerg Rottler's group will perform **atomistic simulations** to predict the internal friction and mechanical loss of oxide glasses of interest for GW detector coatings.

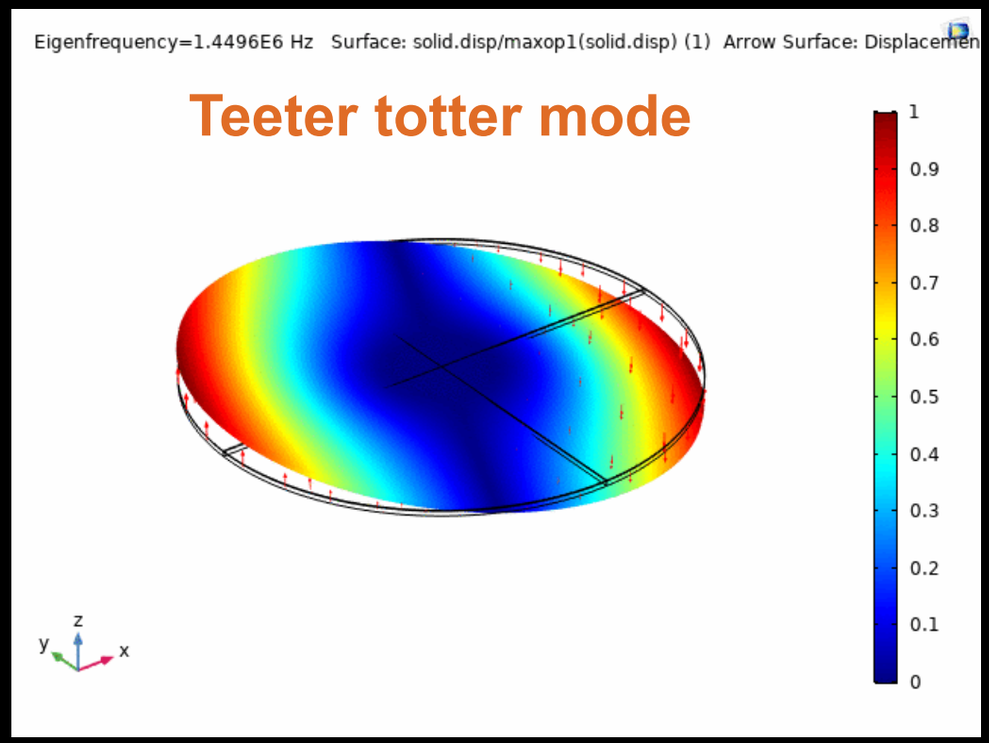
Jeff Young's group will build a **high-throughput optical cryostat** to perform direct measurements of mechanical loss of synthesized materials.

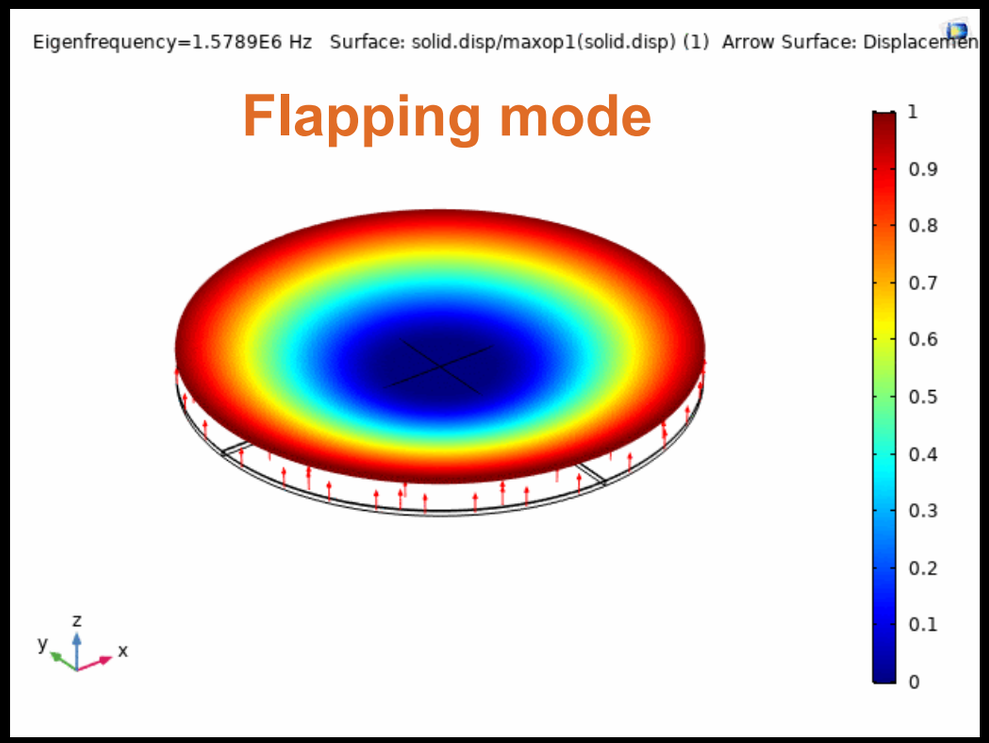
Curtis Berlinguette's group will synthesize state-of-the-art **amorphous metal oxide films** and explore a wide range of metal oxide layered structures.

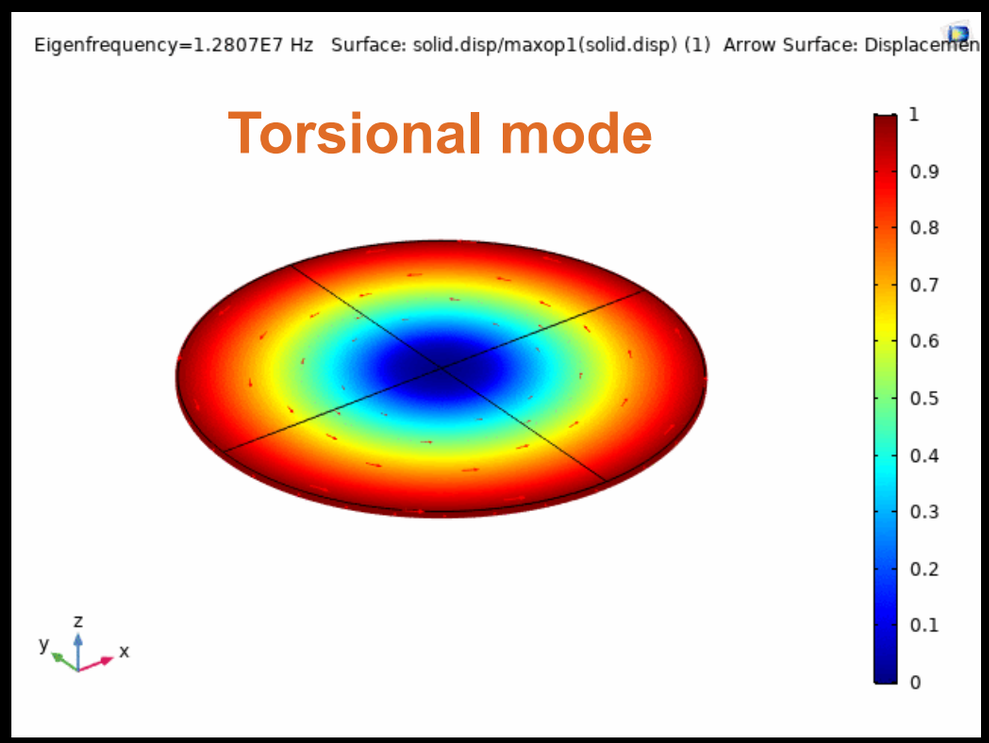
Ke Zou's group will use **molecular beam epitaxy (MBE)** to synthesize amorphous and crystalline oxide candidate materials.

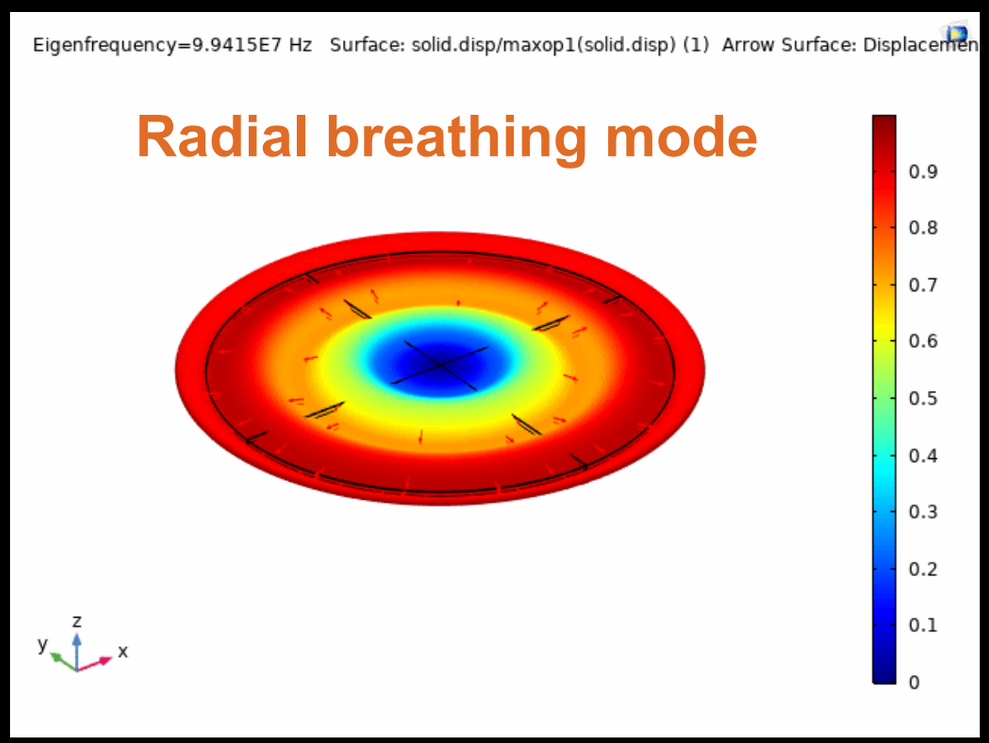
Coating characterization: modeling mechanical microresonators

Ned Booker, Matthew Mitchell, Jeff Young, et al.





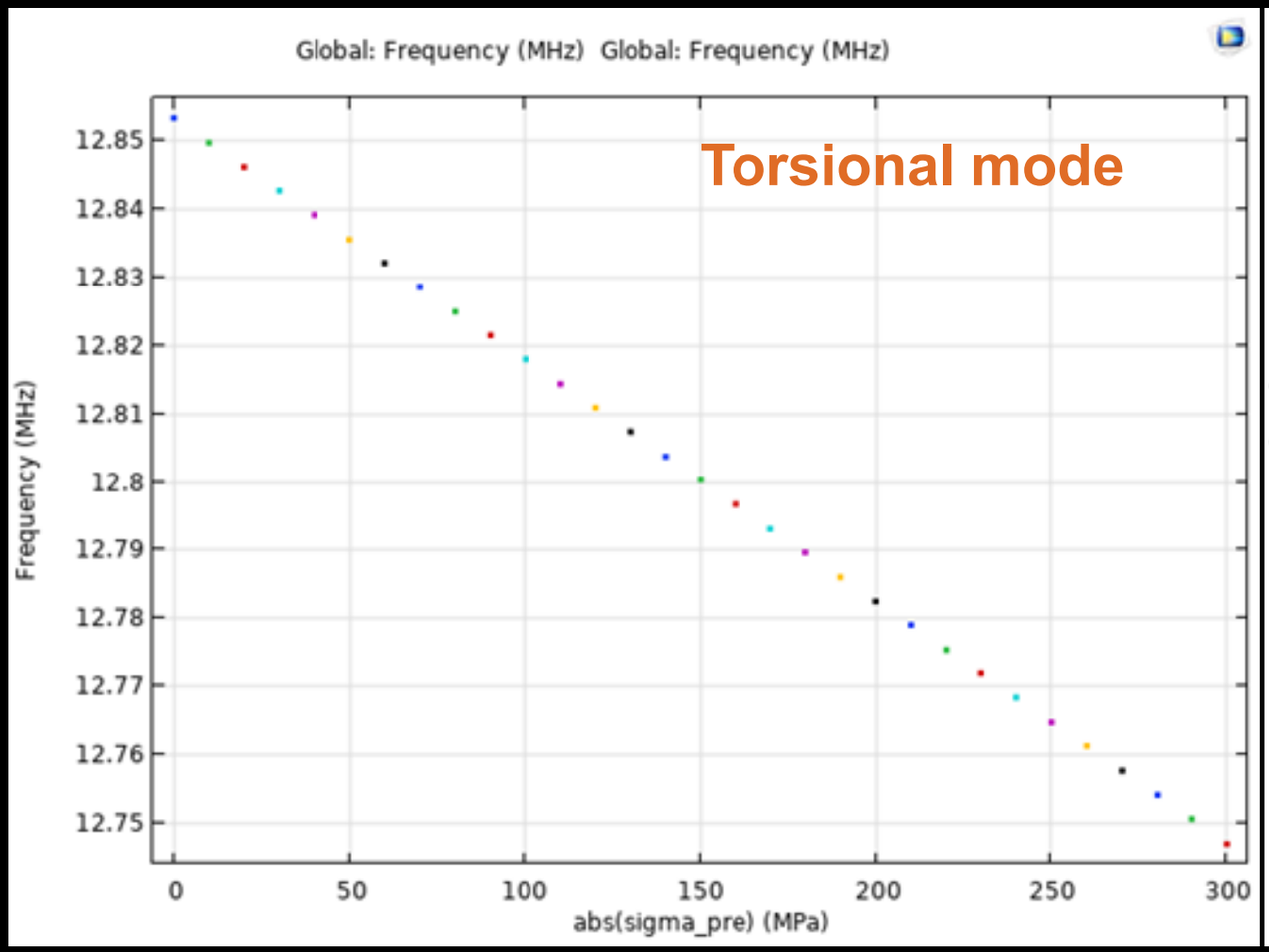


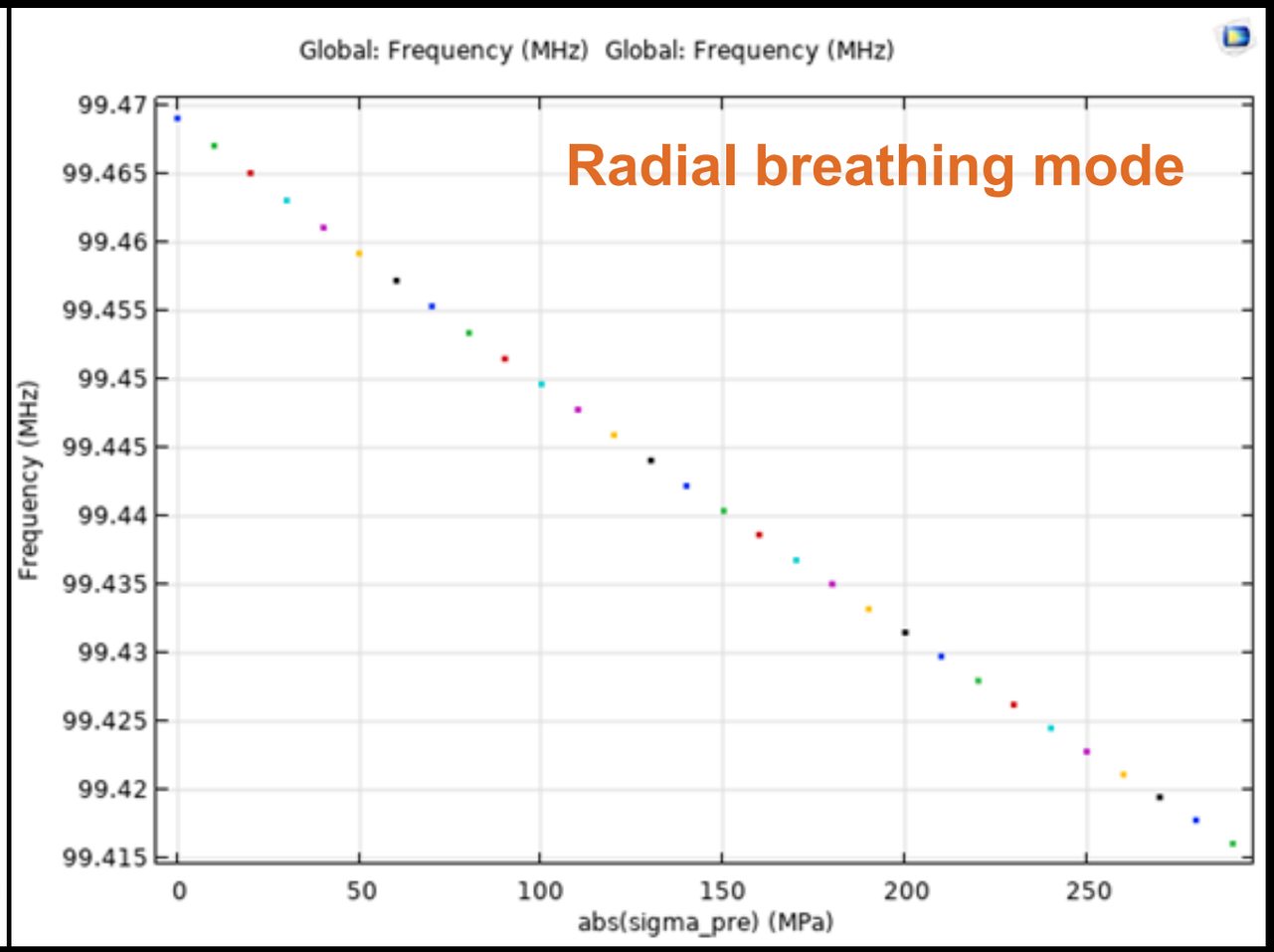


Coating characterization: modeling mechanical microresonators

Ned Booker, Matthew Mitchell, Jeff Young, et al.

Modeling resonance frequency vs. compressive stress





Research in the era of covid-19