Astrophysics Seminar Series

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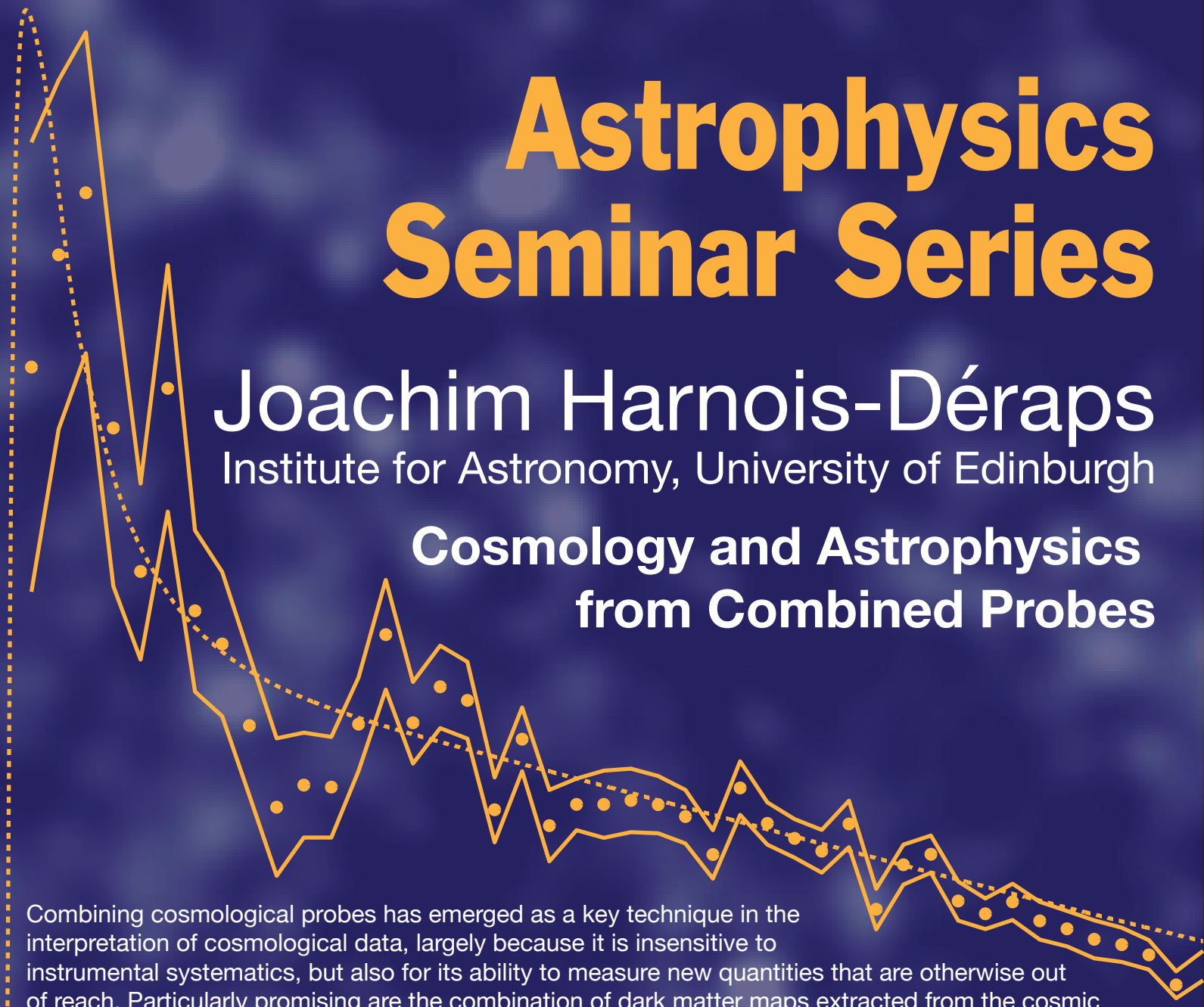
Cosmology and Astrophysics from Combined Probes



Combining cosmological probes has emerged as a key technique in the interpretation of cosmological data, largely because it is insensitive to instrumental systematics, but also for its ability to measure new quantities that are otherwise out of reach. Particularly promising are the combination of dark matter maps extracted from the cosmic shear of galaxy surveys with similar maps reconstructed from the lensing of the Cosmic Microwave Background, and with electron pressure maps measured via the thermal Sunyaev-Zel'dovich effect.

These provide new measurements of the amount of fluctuations in the matter density field, they help in selecting/rejecting baryonic feedback mechanisms currently used in hydrodynamical simulations, in addition to offering an independent re-calibration of the cosmic shear signal. The statistical noise in this measurement will decrease in the next few years, at which point we will push our measurement to smaller scales and constrain the total neutrino mass.

In this talk, I will describe these different techniques, including state-of-the-art data sets, numerical simulations and theoretical modeling, and present some of the latest developments.

20 Sept. 3:30 pm

Bell Room (103), Rutherford Building

For more information: msi.mcgill.ca/Seminars.html