

Physics Colloquium

Prof. Levon Pogosian

“The Hubble Tension and the Magnetic Universe”

Magnetic fields are ubiquitous in the universe, observed essentially in all astrophysical environments. There are good reasons to believe that their origin traces back to the events in the very early universe, such as the electroweak phase transition or Inflation. As I will describe in this talk, accounting for the presence of magnetic fields in the primordial plasma can help resolve a major puzzle of modern cosmology -- the so-called Hubble tension. The latter refers to the disagreement between the value of the Hubble constant, or the current expansion rate of the universe, measured directly using supernovae type Ia and the value predicted by the cosmological model that best fits the cosmic microwave background. Intriguingly, we find that the strength of the magnetic field required to alleviate the Hubble tension is of the right order to also explain the observed magnetic fields in galaxies, clusters of galaxies and the intergalactic space. Our findings motivate further detailed studies of primordial magnetic fields, setting several well-defined targets for future observations.

Levon Pogosian received his PhD from Case Western Reserve University in Cleveland, Ohio, and was a research fellow at Imperial College London, Tufts University and Syracuse University before taking on a faculty position at SFU, where he is now Professor of Physics. He is a theoretical cosmologist using the observable universe as a laboratory for testing the laws of Nature. He is particularly interested in dark energy and modified gravity, cosmic magnetic fields, cosmic strings and other relics of the Big Bang.

Thursday April 22nd at 2:25 via Zoom

**If you are outside the Lehigh Physics Department, please email
Professor Bitan Roy (bir218@lehigh.edu)**