



Contribution ID: 16

Type: Planery

## Dark Neutrino interactions phase out Hubble tension (.. also make Gravitational Waves Blue)

*Friday 16 August 2019 10:06 (17 minutes)*

New interactions of neutrinos can stop them from free streaming in the early Universe even after the weak decoupling epoch. This results in the enhancement of the primordial gravitational wave amplitude on small scales compared to the standard  $\Lambda$ CDM prediction. We calculate the effect of dark matter neutrino interactions in CMB tensor B-modes spectrum. We show that the effect of new neutrino interactions generates a scale or  $\ell$  dependent imprint in the CMB B-modes power spectrum at  $\ell \geq 100$ . In the event that primordial B-modes are detected by future experiments, a departure from scale invariance, with a blue spectrum, may not necessarily mean failure of simple inflationary models but instead may be a sign of non-standard interactions of relativistic particles. Dark matter - neutrino interaction models also have interesting collider signatures. So, in future CMB - B mode can act as a probe of non-standard neutrino interactions and complement collider searches of new physics models.

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**Session Classification:** Innovative Ideas