UNB Physics Department Seminar

Cosmological Perturbation Theory in a Matter-Time Gauge

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In this talk we will examine cosmological perturbations in a Hamiltonian framework with a matter-time gauge. Einstein's field equations will be written in the matter-time gauge. The perturbed three-metric of cosmology, its conjugate momentum and the shift will be substituted in these equations. The equations of motion of the perturbations to linear order will be derived. These equations will then be expanded in terms of spatial Fourier modes. Following that they will be decomposed into scalar, vector and tensor components. After fixing gauges and solving constraints we find that the scalar mode is <u>ultralocal</u> and that the vector modes vanish. We also see that the <u>traceless</u> transverse tensor modes give the known propagation equation for gravitational waves in the Friedmann–Lemaître–Robertson–Walker (FLRW) universe.

Thursday April 4, 2019, 1:15--2:15 pm in P204. Colloquium tea in P203 beforehand