Contribution ID: **71** Type: **not specified**

Relic gravitational waves from light primordial black holes

Thursday, April 21, 2011 6:15 PM (15 minutes)

The energy density of relic gravitational waves (GWs) emitted by primordial black holes (PBHs) is calculated. We estimate the intensity of GWs produced at quantum and classical scattering between PBHs, the classical graviton emission from the PBH binaries in the early Universe, and the graviton emission due to PBH evaporation. If nonrelativistic PBHs dominated in the cosmological energy density prior to their evaporation, the probability of formation of dense clusters of PBHs and their binaries in such clusters would be significant and the energy density of the generated gravitational
waves in the present day universe could exceed that produced by other known mechanisms. The intensity of these gravitational waves would be maximal in the GHz frequency band of the spectrum or higher and this makes their observation very difficult by the existing detectors. However, the low frequency part of the spectrum in the range $f \sim 10^{-4} - 10^{2}$ Hz may be detectable by the planned space interferometers DECIGO/BBO.

For a sufficiently long duration of the PBH matter dominated stage the cosmological energy fraction of GWs from inflation would be noticeably diluted.

Primary authors: Prof. DOLGOV, Alexander (University Of Ferrara); EJLLI, Damian (University Of Ferrara)

Presenter: EJLLI, Damian (University Of Ferrara)

Session Classification: Contributed Talks