



Contribution ID: 22

Type: **not specified**

## Test of Lorentz Invariance from Compton Scattering

*Wednesday, August 5, 2015 4:00 PM (15 minutes)*

In the recent times, test of Lorentz Invariance has been used as a means to probe theories of physics Beyond the Standard Model, especially those such as extensions to String Theory and Quantum Gravity. The announcement of the discovery of primordial gravitational waves by the BICEP2 collaboration, points to a possibility of gravity being quantized. Therefore tests of Lorentz invariance could go a long way in setting the stage for possible quantum gravity theories which are beyond the standard model. We describe a simple way of utilizing electron polarimeters, which are a critical beam instrument at precision and intensity frontier nuclear physics labs such as Stanford Linear Accelerator Center (SLAC) and Jefferson Lab (JLab), to limit the dependence of speed of light with the energy of the photons. We also describe a way of limiting directional dependence of speed of light at previously unprecedented levels of precision by studying the sidereal variations. The method and preliminary results from this study as well as possible limits on CPT violating Standard Model Extension parameters will be presented.

### Oral or Poster Presentation

Oral

**Primary authors:** Dr DUTTA, Dipangkar (Mississippi State University); Mr MOHANMURTHY, Prajwal (MIT)

**Co-authors:** Dr NARAYAN, Amrendra (Mississippi State University); Dr FORMAGGIO, Joseph (MIT)

**Presenter:** Mr MOHANMURTHY, Prajwal (MIT)

**Session Classification:** BSM Physics

**Track Classification:** BSM Low Energy