

The LIGO Event GW150914 Within the Braneworld Scenario

Merab Gogberashvili

E-mail: Merab.Gogberashvili@tsu.ge

Chair of Elementary Particles and Quantum Fields,

Department of Physics,

I. Javakhishvili Tbilisi State University,

3 Chavchavadze Ave., Tbilisi 0179, Georgia&

TSU E. Andronikashvili Institute of Physics,

6 Tamarashvili St., Tbilisi 0177, Georgia

We explore the LIGO signal GW150914 within the braneworld scenario. In this scenario the zero mode gravitons are trapped on a brane due to non-linear warping effect, so that gravitational waves can reflect from the brane walls. If the reflected waves form an interference pattern on the brane then it can be detected on existing detectors due to spatial variations of intensity in the pattern. As an example we consider the LIGO event GW150914 as a manifestation of such interference pattern produced by the burst gravitational waves, emitted by a powerful source inside or outside the brane and reflected from the brane walls [1]. Also we show that the delay in timing of Fermi GBM transient occurred in coincidence with GW15091 can be used to find a bound on spatial curvature of the brane in the spherical brane-universe model [2].

References:

[1] M. Gogberashvili and P. Midodashvili, *Euro. Phys. Lett.* **114** (2016) 50008.

[2] M. Gogberashvili, A. Sakharov and E. Sarkisyan-Grinbaum, *Phys. Lett. B* **763** (2016) 397.