Yukio Tomozawa, J Laser Opt Photonics 2016, 3:1(Suppl)
http://dx.doi.org/10.4172/2469-410X.C1.001

OMICS International
conferenceseries.com

International Conference on

Quantum Physics and Nuclear Engineering

March 14-16, 2016 London, UK

Yukio Tomozawa

University of Michigan, USA

Physical metric in general relativity and masses of black hole merger for the gravitational waves, GW150914

The author starts from the experimental test of general relativity on time delay in the solar system by Shapiro et al. The most recent experiment using the Cassini satellite attained a 1 in 10^5 accuracy level. This indicates that the Schwarzschild metric is not a correct metric and the correct metric is the author's physical metric, in which the speed of light on the spherical direction is constrained to be the value in vacuum. This is a conceptually natural assumption, since the spherical direction is perpendicular to the radial direction which is the direction of the gravity. In this new metric, the size of compact objects, neutron stars and black holes, becomes 2.60 times larger than that of the Schwarzschild radius and is called the extended horizon. The temperature of compact objects is found to be very high, as is evidenced from the existence of highly ionized atoms in the X-ray measurement of compact objects. In this metric, both the point source and a constant density distribution, the internal solution inside the extended horizon is shown to be a repulsive gravitational force, while the gravity outside the extended horizon remains attractive. The repulsive nature of gravity inside the extended horizon is the source for the supernova explosion as well as the reason for high energy cosmic rays generated from AGN, Active Galactic Nuclei, which are massive black holes. Using the physical metric in general relativity, the author suggests that the masses of the merging black holes which produced the gravitational waves in LIGO, GW150914, must be reduced by a factor of 2.60. The masses of the merging black holes are 11.2 (+1.5, -1.5) M_{⊙} and 13.8 (+1.9, -1.5) M_{⊙} and the final mass of the resulting black hole is 23.8 (+1.5, -1.5) M_{⊙}. These masses of the merging black holes are consistent with the observed values of black hole masses.

Biography

Yukio Tomozawa obtained his DSc in 1961 from Tokyo University. He was Assistant Researcher at Tokyo University (1956) and at Tokyo University of Education (1957-1959) - Member at the Institute for Advanced Study, Princeton, NJ (1964-1966). He was Assistant Professor, Associate Professor, Professor and Emeritus Professor at the University of Michigan, USA. He found that the Schwarzschild metric does not fit the data of time delay experiment in the field of general relativity. He has introduced a physical metric which fits the data. It was constructed with the constraint that the speed of light on the spherical direction is unchanged from that in vacuum. This modification changes the way we understand the nature of gravity drastically. In particular, the nature of compact objects, neutron stars and black holes, is very different from that described by the Schwarzschild metric. It also explains the dark energy, supernova explosion and high energy cosmic ray emission from AGN (Active Galactic Nuclei), massive black holes.

tomozawa@umich.edu

Notes: