

DOES DARK MATTER REALLY EXIST?

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The physical metric in general relativity has been introduced by the author as the exact solution of Einstein equation that fits the observation of time delay measurement of the solar system. Applying the physical metric to the galaxy with a simple assumption of mass density and pressure, one can find that the gravity acts a repulsive force inside the galaxy. The attractive force inside the galaxy is provided by negative pressure. As a result, one gets the velocity distribution in the galaxy that is very similar to the observed one. This indicates that the necessity of dark matter from the velocity distribution of the galaxy does not exist.

Biography

Yukio Tomozawa has obtained his DSc in 1961 from Tokyo University. He was an Assistant Researcher at Tokyo University (1956) and at Tokyo University of Education (1957-1959) and Member at the Institute for Advanced Study, Princeton, NJ (1964-1966). He was an 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.

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