

# Review of: "Light Speeds in Stretching and Compressing Spaces"

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**Potential competing interests:** No potential competing interests to declare.

Dear Editor,

I am writing to provide a comprehensive critique of the article titled "Light Speeds in Stretching and Compressing Spaces" authored by Sankar Hajra, which presents a critical viewpoint regarding the detection of gravitational waves by LIGO and VIRGO.

The article challenges the foundational basis of the gravitational wave detection process conducted by LIGO and VIRGO, asserting that the experimental perception lacks scientific grounding. Hajra posits that the assumption made by LIGO-VIRGO scientists, wherein they presume the speed of light remains constant in both steadily stretching and compressing spaces, is flawed and requires further experimental validation.

Hajra contends that as space stretches or compresses, altering the distances traveled by light beams, the speed of light within these altered spaces should correspondingly change. This argument suggests that the fundamental premise of the LIGO-VIRGO experiments, hinging on the constancy of the speed of light in varying spatial conditions, is fallacious.

However, it's essential to scrutinize this viewpoint in light of established scientific principles and the experimental design of LIGO-VIRGO. The argument presented by Hajra contradicts the operational mechanisms of Michelson interferometers used in gravitational wave detection. LIGO/VIRGO experiments are not reliant on modifying the speed of light within each arm of the interferometer, but rather on the interference pattern generated by light beams traveling through arms of fixed lengths.

In these experiments, the interferometer arms themselves alter in length due to the passage of gravitational waves, leading to a detectable interference pattern between the light beams traveling through them. Contrary to Hajra's argument, the speed of light within each arm remains unaltered since the medium traversed by the light beams remains unchanged.

Hence, the core assertion made in Hajra's article, that the speed of light should vary in stretched or compressed spaces and thereby question the validity of LIGO/VIRGO experiments, lacks merit due to its disregard for the experimental setup and the underlying principles governing interferometry.

In conclusion, the argument presented in the article by Sankar Hajra does not align with the operational principles of the LIGO-VIRGO experiments. Therefore, it is imperative to reject the premise that the speed of light within the interferometer arms is modified during the passage of gravitational waves, as it contradicts the established scientific understanding of

these experiments.