Investigating the plasticity of spacetime

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Abstract

By considering plasticity as an attribute of spacetime, an explanation for the interference pattern in the quantum double-slit experiment is presented.

1 Introduction

In the quantum double-slit experiment, an interference pattern is produced even when the test bodies are sent through the apparatus one at a time.

The Copenhagen interpretation explains this phenomenon by considering the test body as a self-interfering wave that takes all paths within the apparatus at the same time. Only upon interaction with other focused energy does the test body collapse into a point-like state, forcing it to take a single path. Examples of such interaction are when a photon is sent to probe the location of the test body during its travel, or when the test body reaches the end of the apparatus and impinges upon the material used to visualize the results of the experiment.

In order to provide further support for the Copenhagen interpretation of self-interference, it could be verified that the spacetime region through which the test body travels is not plastic in nature at the macroscopic scale.

2 Proposed experiment

In-line with current methods, the apparatus consists of a closed container that has been evacuated of all extraneous matter. At one end is the test body emitter, and on the other end is the visualization material. Placed somewhere between these ends is a barrier containing two thin slits that allow the test bodies to travel through.

No attempt should be made to verify which of the two slits the test body traveled through.

In between the emission of each test body, a portion of the closed container is flooded with matter (ex: atmospheric gases), and then re- evacuated. The flood matter should not come into contact with the visualization material, in order to avoid over-exposure.

By exposing a portion of the closed container to the stochastic motions of the flood matter, any preferential path formed by the plasticity of the spacetime should be nullified.

If this method causes no observable change in the pattern produced on the visualization material after sufficient reiteration, then it may be interpreted that the plasticity of spacetime is not a critical factor in the paths followed by the test bodies within the apparatus.

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3 Conclusion

A macroscopic equivalent for spacetime plasticity can be envisioned by considering the state of a snowy ski hill before and after a day of heavy usage. Conscious decision aside, the majority of paths taken over time by the skiers will overlap and group toward the centre of the hill because it is easier to travel through arteries of flatly packed snow.

Does the spacetime region within the apparatus exhibit this type of plasticity? If so, do the test bodies also prefer to take (or avoid) the path well-traveled?