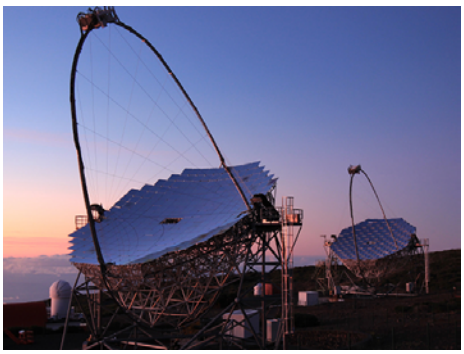

RESEARCH

MAGIC CONFIRMS: THE SPEED OF LIGHT IS CONSTANT EVEN AT HIGHER ENERGIES

The two MAGIC high-energy gamma-ray telescopes, operating at the "Roque de los Muchachos" Observatory on La Palma in the Canary Islands, detected, for the first time, a gamma ray burst (GRB) at very high energies and with an intensity never before observed from this type of cosmic object. The high radiation flow enabled scientists of the collaboration to verify the constancy of the speed of light in vacuum at different energies, providing new proof of Einstein's General Theory of Relativity. Recent theories maintain, in fact, that on infinitely small scales, gravity can assume a quantum nature and spacetime can be described as a thin grid, instead of a continuous surface as General Relativity would require. In this way, the spacetime structure would interfere with the speed of the propagation of light in vacuum, since the latter should follow a more "uneven" path and, thus, a longer one, especially at higher frequencies. This hypothetical phenomenon, called "Lorentz Invariance Violation" (LIV) by physicists, would have very small effects that people believe could be measured if accumulated for a very long time and across very big distances. The cosmic sources, especially very high-energy ones very far away, such as the GRB, are, thus, ideal candidates to investigate the LIV. In any case, the analysis of data recorded by MAGIC has not detected any delay in the arrival times of gamma rays dependent on energy, as would be expected if there were a quantization of spacetime. The results, which were obtained on 19 January 2019, were published last 9 July in the journal: Physical Review Letters (*article*). ■