

Source???

the search for quantum gravity has inspired a search for ways SR might be modified.

a deeper look at some experiments that appear to refute SR:

Group velocity $>c$ in anomalous dispersive media

Visible superluminal astronomical sources: apparent speed is greater than c , actual speed $> c$

Michelson and Morley (!): error bars are from a histogram of the values that were averaged.

They are dominated by the systematic error.

Dayton Miller's repetition of the MMX:

Because of the large error bars of his results, his results are not statistically significant.

Dayton kept enough data so that the systematic error could be documented and modeled and subtracted out.

In a reanalysis, it was concluded that Miller was unknowingly looking at insignificant patterns in the systematic error that mimicked the appearance of a real signal.

Aether theories: the Lorentz Ether Theory remains valid today (except for quantum phenomena)

Problems for Aether theories: if light is propagated as a wave in the Aether, how does quantization of light arise?

How do absorption spectra arise?

Summary: amateurs look at patterns; professionals look at error bars. Measure your systematic errors.

Today SR stands unrefuted experimentally

SR and its Lorentz invariant have been instrumental in the search for new fundamental theories: GR, QED, Electro-weak, QCD, the Standard Model.

But this may not be true in the future: quantum gravity may violate SR

QG may have detailed structure at the Planck scale.