

Is the Phase of Plane Waves an Invariant?

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Based on the invariance of the phase of waves, plane waves were shown to propagate with *negative frequencies* in a medium which moves at 'superluminal' speed opposite to the propagation direction of the plane waves. The validity of the invariance of the phase of plane waves was then called into question. A radical change of the conventional concept of plane waves is recently proposed to solve the problem of negative frequency of waves. We will explicitly point out flaws in that proposal. Thus, the validity of the invariance of the phase of plane waves remains questionable.

Key words: Special Relativity; Phase Invariance; Lorentz Transformation; Lorentz-Covariant; Negative Frequency.

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