Superluminal Velocities

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Abstract

The possibility of superluminal motion has been a subject of study for several decades. We discuss the conditions under which superluminal motion can be observed within the framework of Special Relativity, distinguishing between "apparent" and "real" superluminal motion. The former would include radio astronomy data on jets from AGN sources, and the latter the production of Cerenkov radiation in a medium.

Mathematical solutions to wave equations allow for families of waves with "superluminal" speeds. In this context, we discuss the experimental evidence for the so-called acoustic "X-waves". We mention the attempts to observe similar phenomena in microwave radiation, and evidence for superluminal speeds involving "evanescent" waves.

We conclude by discussing the implications to the causality problem.

References

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