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Superluminal representations in modern physical researches

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In the present, modern theoretical and experimental works faster-than-light velocities are considered as hypothetical. Therefore, one establishes a correlation with the theory of relativity and foundational physical theories. Earlier hypothetical superluminal particles – tachyons and following field constructions were suggested. At the same time, it is assumed a possibility of a continuous field medium possessed by superluminal properties. Separate experimental works made in laboratory conditions contain the presence of superluminal signals. In the first work the experiments deal with the amplification of laser pulses were realized. The other work series contained the experiments of propagation of high frequency electromagnetic pulses through dielectric barriers. For astrophysical conditions one expressed opinions about a possible exceeding of the light velocity during electromagnetic waves motion in the interstellar medium in the presence of anomalous dispersion. For a possible registration of superluminal signals in cosmos it was expressed the following opinions. The first method deals with a possible origin of superluminal signals during relativistic electrons motion in upper layers of the Earth's atmosphere. The other possibility contains the assumption of the authors about the presence of a tachyon component faster than an electromagnetic component in a star radiation. It is proposed a possible theoretical basing of the considered experimental methods. A note should be taken that probable methods of a far astrophysical object observation with the help of a faster-than-light radiation are sufficient value for observing astronomy. Therefore, these hypothetical versions need a theoretical and experimental basis and further researches.

Biography

Dmitri Kirko has completed his Engineer-Physicist qualification from Moscow Engineering Physics Institute (MEPhI) and then had defended candidate physics-mathematics science degree. He is the Associate Professor of Plasma Physics Department of MEPhI. He has published more than 15 papers in reputed journals.

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