

Abstract Submitted
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Inertia (mass) as a relativistic property of a fundamental wavefunction. ALEXANDER PANIN, Utah Valley State College — Origin of mass of a matter is still a mystery. After four decades of search the existence of Higg's boson still is not confirmed experimentally. Alternative mechanism of generating mass is proposed here. A standing wave consisting of two fundamental wavefunctions $\exp(i(\omega t - kx))$ and $\exp(i(\omega t + kx))$ naturally acquires property we call inertial mass just as the result of Lorentz transformations (from the reference frame of the standing wave to the reference frame of a moving by the wave observer). Another by-product of these transformations is De Broglie wavelength of the spatial distribution of amplitude of such standing wave (as seen from the frame of moving by it observer). Relativistic wave in more than 1 spatial dimension (cylindrical and spherical wave) has angular momentum which can be associated with spin. So it is not impossible that what we call "elementary particles" are actually systems of massless relativistic waves.

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