The Relativity of the Photon Mass SERGEJ REISSIG, EFBR — In the standard model of the electromagnetic radiation, a photon is mass-less. In [1] it was showed that the puzzling question – whether a photon does or does not have a zero mass – can be however answered. According to the new viewpoint, photons can exist in two states: 1) photons have energy and collide neither with a medium nor with surfaces; 2) photons collide with a medium or a surface. In the first case (1), photons possess latent or potential energy and are invisible. In the second case (2), they are visible Wirkungsquantums according to the Planck's quantum theory. The energy of a photon could in case (1) be determined by Planck's equation $E_P^1 = hf$ and in case (2) by Einstein's formula $E_P^2 = mc^2$. By a collision (Wirkung) between a photon and a medium or surface, an energy transformation takes place: the mass-less and invisible light particle (phantom) with latent energy, is converted into a visible photon, which now possesses an impulse mass and energy. For the case that the photons "bomb" a surface, which moves with a velocity v into the same direction as the photons, a new equation for the photon mass has been derived: $m_P = 2.2102186 \cdot 10^{-42} \cdot \lambda^{-1} \cdot [(1 - v/c)/(1 + v/c)]^{0.5}$ (kg) 1. Über die Relativität der Masse und Energie des Lichtquanten, S. Reißig, 2005, http://www.efbr.org in /Publikationen.

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