

Abstract Submitted  
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**A Theory of Frozen Light According to the General Theory of Relativity** DMITRI RABOUNSKI, LARISSA BORISSOVA — We suggest a theory to frozen light, which was first registered in 2000 by Lene Hau. Frozen light is explained here as a new state of matter. The explanation is given through space-time terms of the General Theory of Relativity. We consider a fully degenerate region of space (space-time), which is the ultimate case of the isotropic region (home of photons), where the metric is particularly degenerate. Both the space-time interval, the observable time interval, and the observable three-dimensional interval are zero in a fully degenerate region. Therefore, we refer to such a region and particles which inhabit it as zero-space and zero-particles. Moving to the coordinate quantities inside zero-space shows that real speed therein is that of light, depending on the gravitational potential and the rotation of space. It is shown that the eikonal equation for zero-particles is a standing wave equation: zero-particles are standing light waves, while zero-space is filled with a system of standing light waves (light-like hologram). With these, zero-particles appear to a regular (external) observer as mere stopped light. This paper has been submitted to The Abraham Zelmanov Journal.

Dmitri Rabounski

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