Legendary lecture about metamaterials

by Prof. Victor Veselago

About the lecture:

Professor Veselago was the first to identify that the relationships between energy and linear momentum are significantly different for electromagnetic radiation and material particles. The process of transfer of radiation from the emitter to the receiver will be discussed. It is shown that the mass transferred by radiation is not always associated with portable energy by Einstein's relation $E = mc^2$. A more general relation has the form $E = mV_{ph}V_{gr}$ and includes the dependence on the phase and group velocities of the radiation. This relation implies that in case of a negative refractive index, when the phase and group velocities are in opposite directions, the mass is transferred from the receiver to the source, but not vice versa, as usual. It is also shown that the Abraham-Minkowski controversy may be resolved on the basis of the wave-corpuscular duality.

Brief Biography of Professor Victor Veselago

Victor Georgievich Veselago is a professor at the Moscow Institute of Physics and Technology and head of the laboratory of "Magnetic Materials" at the Institute of General Physics, Russian Academy of Sciences. Professor Veselago's areas of scientific interest include magnetism, solid-state physics, and electrodynamics. His papers published in 1966-1972 considered electrodynamics of materials with negative refraction index values (so called left-handed materials, LHM). V.G. Veselago is a winner of the State Prize for Science of USSR (1976), the V.A. Fock Academic Award (2004), and the C.E.K. Mees Medal from the OSA (2009). He is also an Honored Scientist of the Russian Federation (2001). He is an active expert in the Russian Foundation for Fundamental Research, the Russian Foundation for Humanitarian Research, and is vice-chairman of the physics section of the Supreme Attestation Committee of Russia (VAK). He is a founder and vice-editor of the electronic, scientific journal "Investigated in Russia."

November 2nd, 12-1pm @ BRK 2001

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