The NSTP Theoretical Solution of the Problem of Yang-Mills Existence and Mass Gap: The introduction of fundamental new ideas in physics and in mathematics*

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Abstract

This work presents the NSTP (Non – Spatial Thinking Process) theoretical (philosophy of mind) idealistic solution to the problem of Yang-Mills existence and mass gap, the millennium problem announced by the Clay Mathematics Institute. As stated by the institute, 'Quantum Yang-Mills theory is now the foundation of most of elementary particle theory, and its predictions have been tested at many experimental laboratories, but its mathematical foundation is still unclear. The successful use of Yang-Mills theory to describe the strong interactions of elementary particles depends on a subtle quantum mechanical property called the "mass gap:" the quantum particles have positive masses, even though the classical waves travel at the speed of light. This property has been discovered by physicists from experiment and confirmed by computer simulations, but it still has not been understood from a theoretical point of view. Progress in establishing the existence of the Yang-Mills theory and a mass gap will require the introduction of fundamental new ideas both in physics and in mathematics.' If the property of mass gap contradicts the special relativistic law that no massive entity can travel at the speed of light, the point of this work is to understand that special relativity is not fundamental to nature. The new physics required to solve the problem has essentially "an idealistic framework" and the new mathematics contains terms such as "non-spatial consciousness". Though the problem is officially expressed in a conventional symbolic mathematical language, the appropriate solution necessarily has an unconventional superconceptual mathematical language, just as its radical non-spatial computational physics does.

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