Abstract Submitted
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No Drama Quantum Theory? ANDREY AKHMETELI, LTASolid Inc. — Is it possible to offer a "no drama" quantum theory? Something as simple (in principle) as classical electrodynamics - a theory described by a system of partial differential equations (PDE) in 3+1 dimensions, but reproducing unitary evolution of a quantum field theory in the Fock space? The following results suggest an affirmative answer: 1. The scalar field can be algebraically eliminated from scalar electrodynamics; the resulting equations describe independent evolution of the electromagnetic field (EMF). 2. After introduction of a complex 4-potential (producing the same EMF as the standard real 4-potential), the spinor field can be algebraically eliminated from spinor electrodynamics; the resulting equations describe independent evolution of EMF. 3. The resulting theories for EMF can be embedded into quantum field theories. Another fundamental result: in a general case, the Dirac equation is equivalent to a 4th order PDE for just one component, which can be made real by a gauge transform. Issues related to the Bell theorem are discussed. A. Akhmeteli, Int'l Journal of Quantum Information, Vol. 9, Suppl., 17-26 (2011) A. Akhmeteli, Journal of Mathematical Physics, Vol. 52, 082303 (2011) A. Akhmeteli, quant-ph/1111.4630 A. Akhmeteli, J. Phys.: Conf. Ser., Vol. 361, 012037 (2012)

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