Abstract Submitted
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**Unification of gravitational and electromagnetic forces**[1] LING JUN WANG, Univ of Tennessee, Chattanooga — It has been a dream of physicists to unify all the fundamental forces over at least a century. The last stage of this dream is the Theory of Everything (TOE) to unify all the four forces, including the gravitational force. It has been realized that general relativity is incompatible with quantum mechanics. Recently, we have developed a theory with mathematical rigor to unify the gravitational and the electromagnetic forces strictly within the classical framework by generalizing Newton's law of gravitation to include a dynamic term inferred from the Lorentz force of electromagnetic interaction [Wang, L.J., *Unification of Gravitational and Electromagnetic fields*, *Physics Essays,* Vol. 31, No. 1, 2018.]. An entire dynamic theory including a wave equation of gravitation is developed without any additional ad hoc hypothesis. The wave equation and its solution naturally solve the mystery of action-at-distance with significant new discoveries: It has been shown that the inverse square law of the static and the dynamic forces is the result of the conservation of mass and the newly discovered conservation law of total momentum. The gravitational force and the electromagnetic force are thus unified in the sense that these two forces and their propagation can be described by exactly the same set of equations.

[1]Unification of Gravitational and Electromagnetic forces

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