

Tai T. Wu

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Tai Tsun Wu's research includes projects in high-energy particle physics, statistical mechanics, classical electromagnetic theory, and quantum information processing. He has a long-standing interest in the theory of very-high-energy collisions. Some of his unexpected predictions, such as the increasing total cross sections, have been verified experimentally at the CERN proton-antiproton Collider and the Fermilab Tevatron Collider. Recent efforts have been concentrated on understanding production processes for the Large Hadron Collider (LHC) being built at CERN and scheduled to become operational in September of 2007. One especially important process is the theoretical prediction for the production cross section of a Higgs particle with low momentum together with two forward jets. In statistical mechanics, Wu's work is mostly on Bose-Einstein condensation in an external potential. In recent years, there has been a groundswell of interest in the general notion of applying quantum mechanics to advanced computing and communication. Appropriate for groundbreaking conceptual work, the models used to arouse interest in quantum computing and secure quantum communication have been the simplest possible. In particular, most of the early work was based on the Schrödinger equation without any spatial dimension. The idea being pursued here is to apply quantum mechanics and quantum field theory to these problems, including the modeling and application of quantum memories.