Physics Colloquium

Thursday, Sep 15th at 3:30 pm in CHEM 113

(Physics-Math Joint Colloquium)

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Huygens triviality of the time-independent Schrodinger's equation

It is well documented that Schrodinger's equation in its known form had emerged only in the 4th of Schrodinger's papers written in 1925. Development of quantum mechanics in the 1st of 3 papers was guided by the Huygens' principle. The same principle was also used by Jacques Hadamard in his studies of partial differential equations of hyperbolic type. Developments in physics and in mathematics of the same topics proceeded without overlap till late sixties and still are not complete. In our talk we address this deficiency being guided by the experimental observations. We apply the concept of Huygens triviality (put forward by Hadamard) to the time-independent Schrodinger's equation thus bringing Schrodinger's 4th installment on quantum mechanics in accord with 3 previous ones. As result, many new aspects of Schrodiner's formulation of quantum mechanics had emerged, e.g. its connection with twistor formalism, with Lie sphere geometry, with quaternionic harmonic analysis, etc. These connections allow us to reinterpret some current experiments and they paves the way towards entirely different formulation of quantum mechanics making it part of quantum field and string theory in the most logical way.

Refreshments at 3:00 pm in SC 103