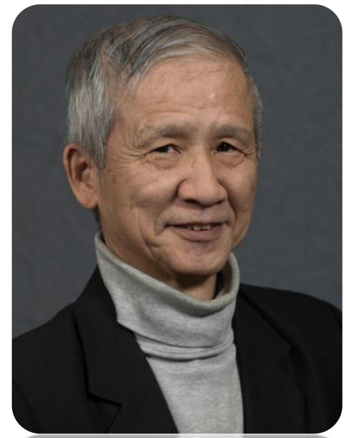
Quantum Computing, quantum teleportation and time crystals



Dr. Cheng Hsiao Wu

Electrical and Computer Engineering
Missouri University of Science and Technology

Chemistry Seminar on *Quantum computing*

Monday Jan. 30 at 4 pm in 303 Schrenk

Please contact Dr. Amitava Choudhury at choudhurya@mst.edu for further information.

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Abstract: Quantum computing are parallel computing and are nonlocal in nature. Geometry, physics and computing are triangularly inter-related. There exist four new fundamental nonlocal operator-state relations for an entangled atomic chain. Computation states are then cyclic. There exists a minimum entanglement distance between any two atoms of the chain. Any addition of four times of that distance provides the foundation for quantum teleportation in a piece-wise Euclidean chain. Time crystals are the direct computation results that an entangled chain is capable of computing. There are four interacting planar time crystals with the same Poincare cycle, but only half of the results are observable as we predict and thus quantum computing is "irreversible". However, when geometry changes, there exist "spherical time crystals" from the rotational symmetry breaking. Thus, we predict "time" can be "curved" in the Fourier space, the space we observe all the parallel computation results. In long entangled chain, a small section of time crystal can be duplicated elsewhere of the chain with "birth-and-death' capability in addition to the "perpetual motion" claimed by the Google group last July. Sierpinski triangle with self-similar features provides the foundation for the true artificial intelligence where larger scales of operator-state space-time relations emerge.

About the speaker: Dr. C. H. Wu got his PhD degree in solid state physics from University of Rochester in 1972 under late Elliott Montroll, then the Albert Einstein Professor of Physics and Chemistry. He was a post-doctoral fellow in New York University and City College of New York (CCNY). Then a visitor to Max-Planck Institute of Solid-state Physics in Stuttgart, Germany. He worked for RCA Laboratories in Princeton, N.J. before joining University of Missouri-Rolla in 1983. Among his research accomplishments, he worked on quantum network theory and showed the "universal double periodicity" of Aharonov-Bohm effect, developed a three-terminal quantum circulator, derived the first quantum Thevenin theorem for quantum circuits and recently provide a correct ruled-based nonlocal quantum computing theory that left the traditional Qubit theory behind. He also holds the first-ever US Patent of a quantum processor for general-purpose quantum computing.