A Quantum Observation Technique: The ‘Celalettin-Field Quantum Observation Tunnel’ in an IC-Manifold and the ‘Celalettin Tunnel Conjecture’; a Short Communication

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Abstract: The ‘Celalettin-Field Quantum Observation Tunnel’ (Celalettin Tunnel) is a quantum observation technique. It is within a pneumatic manifold of Euclidean space where the randomness of particle Orbital Angular Momentum (OAM) is mitigated via electric polarization. It is described by the Celalettin Tunnel Conjecture. The presence of an electric field affects the nuclear spin of the particles within the pneumatic manifold. The manifold, namely the IC-Manifold, or Invizicloud© is unique as its axioms are a combination of classical and quantum non-logical parameters. The IC-Manifold has a variable density and exists only according to ‘Celalettin’s two rules of quantum interaction’:

1. Quantum interaction causes quantum observation during fundamental particle interactions with orbital angular momentum electric polarized atoms within the IC-Manifold causing depolarization.
2. The photoelectric effect is not limited to solids but can occur in an IC-Manifold.

Keywords: Celalettin Tunnel Conjecture, Quantum Observation

Celalettin Tunnel; The technique

Anti-ferromagnetism affects the OAM spin within pneumatic matter (Raicher et al., 2014; Lanzagorta, 2011). The IC-Manifold is illustrated in the directions of the nuclear spins of a pneumatic ensemble of particles represented as arrows (Fig. 1).

The Celalettin Tunnel theoretically works similarly to magnetic resonance imaging (Salerno et al., 2002; Walker and Happer, 1997). An entangled photon depolarizes Helium-3 atoms as it burrows through the IC-Manifold and creates a tunnel (Celalettin and King, 2018). The depolarized particles are considered a single quantum system and can be used to acquire information on the signaller (Celalettin and King, 2018; Bassi et al., 2013; Gaëtan et al., 2009; Zurek, 2006; Heisenberg, 1985). The photon would become weaker as it scattered through an ensemble of atomic Helium-3 until it was absorbed or escaped (Christillin, 1986; Joos et al., 2013; Singh et al., 2016).

Fig. 1: Antiferromagnetic ordering

At Fig. 2, the Celalettin Tunnel is made from the collective depolarized electrons in the IC-Manifold after the signaller has penetrated it (Salerno et al., 2002; Celalettin and King, 2018; Stewart, 2005; Fox, 1987). Immediately after the signaller produced a tunnel through the IC-Manifold (Celalettin and King, 2018; Heisenberg, 1985; Raicher et al., 2015; Heisenberg and Bond, 1959). If a gas is subject to anti-ferromagnetism its intrinsic spin properties will polarize and portray entropy attributes such like a solid (Walker and Happer, 1997; Gachet et al., 2010; Shirley, 1965). Those affected
atoms could emit a bound electron depending on the photon’s energy, given:

\[
\frac{n_{i+1} + n_i}{n_i} = 2 \frac{g_i}{g_i'} \exp \left[ -\frac{(e_i - \epsilon)}{k_B T} \right]
\]  

(1)

Where:

- \( n_i \) = The density of atoms in the \( i \)-th state of ionization, that is with \( i \) electrons removed
- \( g_i \) = The degeneracy of states for the \( i \)-ions
- \( \epsilon_i \) = The energy required to remove \( i \) electrons from a neutral atom, creating an \( i \)-level ion.
- \( n_e \) = Is the electron density
- \( \lambda \) = The thermal de Broglie wavelength of an electron

We use the classical models by considering the classical spins with magnetic moments \( \mu_A = \mu_B \). To simplify we assume that nuclear spin interaction is disordered of the Heisenberg form (Heisenberg, 1985; Fukushima, 2015; Brandsema et al., 2014). So, the ferromagnet model described by the classical Hamiltonian of the type:

\[
\langle \zeta^{\alpha \beta}(t) \zeta^{\alpha \beta}(t') \rangle = \frac{2\lambda}{\mu_B} \frac{k_B T}{\gamma^2} \delta_{\alpha \beta} \delta(t-t')
\]  

(2)

\[
H_{\text{ext}} = -\frac{1}{\mu_i} \frac{\partial H}{\partial \gamma} = H + \frac{2D_i}{\mu_i} \xi^i \xi^i + \frac{1}{\mu_i} \sum_{\text{next}(i)} J_{ij} \xi^j
\]  

(3)

Where:

- \( H \) = Hamiltonian
- \( N \) = Total number of spins
- \( I \) and \( J \) = Lattice sites
- \( D_i \) = The anisotropy constant of site \( I \)
- \( |S_i| \) = The third sum is over neighbour pairs

\( J_{ij} \) = JAA(BB)>0 Heisenberg exchange interaction parameter

\( \lambda_i \) = Is the coupling to the heat bath parameter

\( a, b \) = Cartesian \( Z \) components heat bath and \( T \) is the temperature

Each point of an n-dimensional manifold has a neighbourhood or a set of points acting like barriers, defining the region where the content within the IC-Manifold can exist, or the walls of the IC-Manifold itself (Gachet et al., 2010; Haroche, 1999). Helium-3 has an intrinsic nuclear spin of \( \frac{1}{2} \) and can be hyperpolarized by spin exchange optical pumping. Depolarization occurs to make way for the quantum entangled photon (Walker and Happer, 1997). Hyperpolarization using non-equilibrium means for spin-exchange optical pumping is achieved by Coulomb Forces; such that:

\[
F = \frac{1}{4m_i} \frac{qQ}{r^2} = k_B \frac{qQ}{r^2}
\]  

(4)

where, \( r \) is the distance between the two charges \( q \) and \( Q \) Newtons.

Given the Boltzmann equation to accommodate the density of the environment in which the photon-electron interactions will occur in the presence of an electric field:

\[
n_e (\Phi) = n_e (\Phi_0) e^{(\Phi - \Phi_0)/k_B T},
\]  

(5)

Where:

- \( n_e \) = Electron number density
- \( T_e \) = Temperature of the plasma and
- \( k_B \) = Boltzmann constant.
- \( \Phi \) = Work function

Fig. 2: Celalettin-Field quantum observation tunnel in an IC-Manifold (Helium-3 atoms in grey have been depolarized)
Celalettin Tunnel; The Conjecture

In an IC-Manifold, the Celalettin Tunnel is theoretically produced by an incoming entangled photon. When viewed as a single quantum system, the collectively affected Helium-3 atoms describe the photon.

The Schrödinger wave function equation:

$$\nabla^2 \psi + \frac{8\pi^2 m}{h^2} (E - \Gamma) \psi = 0 \tag{6}$$

where the Laplacian of a scalar for spherical coordinates is given by:

$$\Delta \Psi = \frac{1}{r^2} \frac{\partial}{\partial r} \left( r^2 \frac{\partial \Psi}{\partial r} \right) + \frac{1}{r^2 \sin \theta} \frac{\partial}{\partial \theta} \left( \sin \theta \frac{\partial \Psi}{\partial \theta} \right) + \frac{1}{r^2 \sin^2 \theta} \frac{\partial^2 \Psi}{\partial \phi^2} = \frac{1}{r^2} \frac{\partial^2 \Psi}{\partial \phi^2} \tag{7}$$

Where:
- \( E \) = Energy
- \( V \) = Potential energy
- \( m \) = Mass
- \( h \) = Planck’s constant
- \( \phi \) = The azimuthal angle and
- \( \theta \) = The zenith angle or co-latitude

Rearranged to express quantum entangled photons in a quantum radar:

$$|\Psi\rangle = \frac{1}{\sqrt{2}} (|e, a e^{\phi}\rangle + |g, a e^{-\phi}\rangle) \tag{8}$$

Where:
- \( ae \) = Eigenvalues
- \( e = \gamma_{sig} \)
- \( g = \gamma_{idler} \)

**Bra-Ket Notation**

An electron’s spin: \(|\uparrow\rangle \uparrow\rangle\)

With an observer: \(|\uparrow\rangle \rangle obs|\uparrow\rangle \rangle obs\)

For an entangled quantum system: \(|\uparrow\rangle \rightarrow (+|\downarrow\rangle \rangle) /2 \rightarrow (|\downarrow\rangle \rangle \rightarrow (+|\uparrow\rangle \rangle) /2 \)

Where the observer is added: \(|\uparrow\rangle obs \rightarrow ( (+|\downarrow\rangle obs /2 \rightarrow (|\downarrow\rangle \rangle obs \rightarrow (+|\uparrow\rangle \rangle obs /2 \)

If the observer can measure the state, the state of the observer changes and the observer can no longer be factored out of the whole state: \((|\downarrow\rangle obs |\rightarrow + |\uparrow\rangle obs /2 \rightarrow (|\downarrow\rangle \rangle obs |\rightarrow + |\uparrow\rangle obs /2 \)

The quantumness of \(|obs1\rangle \rightarrow |obs2\rangle obs1 \rightarrow |obs2\rangle |obs1\rangle \rightarrow |obs2\rangle |obs2\rangle descnbspace describes the electron spin as not acting quantum mechanically and hence decoherence is achieved (Panarella, 1987).

Spin exchange optical pumping can be represented by:

$$P_n(t) = \langle P_n \rangle \left[ \frac{\gamma_{SE} + \Gamma}{\gamma_{SE}} \right] \left[ 1 - e^{-\gamma_{n+1} t} \right] \tag{9}$$

Where:
- \( P_n(t) \) = Nuclear polarization (spin)
- \( \langle P_n \rangle \) = The atom’s polarization
- \( \gamma_{SE} \) = The spin exchange rate
- \( \Gamma \) = The longitudinal relaxation rate

The Lagrangian scalar formulation to investigate the required kinetic energy of a photon to cause the Celalettin Tunnel (Haroche, 1999). It is given by:

$$L_{QED} = \frac{1}{2} \left[ (\partial_\mu A_\mu) \Phi^* \left( (\partial_\nu - i e A_\nu) \Phi \right) \right]$$

$$\frac{1}{2} M^2 \Phi + \Phi - \frac{1}{16\pi} F_{\mu\nu} F^{\mu\nu} \tag{10}$$

Where:
- \( \Phi \) = Charged scalar field,
- \( \Phi^* \) = Its complex conjugate

The electromagnetic strength required is given by Faraday’s law of induction. The trajectory of an ensemble of particles is derived from the Lagrange equations, where the Euler-Lagrange equation describes the motion for the scalar field (Raicher et al., 2014):

$$\delta L = \partial_\mu \delta \Phi^* \tag{11}$$

Yielding the Klein-Gordon (Raicher et al., 2015):

$$\left[ -\partial^2 + M^2 \right] \Phi = \left[ -e^2 A^2 + 2ieA \cdot \partial \right] \Phi \tag{12}$$

Where:
- \( \partial^2 \equiv \partial_\mu \partial_\mu \)
- \( A^2 \equiv A_\mu A^\mu \)
- \( A \cdot \partial \equiv A_\mu \partial_\mu \)

Further:

$$\frac{d^2 y}{dt^2} + \left( a - 2q \cos 2x \right) y = 0 \tag{13}$$

where, \( a \) and \( q \) are the quantum parameters.

That is repolarizing the Celalettin Tunnel within the IC-Manifold. That time is expected to occur, given:

$$M_n(t) = M_n(0) e^{-\gamma t} \tag{14}$$
Where:

\[ M_{xy} = \text{The transverse component of the magnetization vector} \]

\[ T_2 = \text{A time constant characterizing the signal decay} \]

\[ e = \text{Euler's number} \]

A ‘Celalettin Tunnel Conjecture’ can therefore mathematically be described:

\[ T_{\text{Celalettin}} = \Psi, C_e, \mathcal{L}_{\text{QED}}, P_N(t) \tag{15} \]

Where:

\[ T_{\text{Celalettin}} = \text{The Celalettin Tunnel} \]

\[ \Psi = \text{The Schrödinger equation} \]

\[ C_e = \text{The Mathieu differential equation} \]

\[ \mathcal{L}_{\text{QED}} = \text{Symbolizes Lagrangian QED} \]

\[ P_N(t) = \text{The rate of nuclear spin repolarization} \]

**Conclusion**

While the Celalettin Tunnel Conjecture may be a far reaching and radical theory and initially seem philosophical and preposterous, it adheres to a list of governing equations that enable it in theory. Until such time as it is modelled considering density and time, it cannot be dismissed.

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**Authors Contributions**

All authors equally contributed in this work.

**Ethics**

This article is original and contains unpublished material. The corresponding author confirms that all of the other authors have read and approved the manuscript and no ethical issues involved.

**References**


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