New method in muon-hadron absorption on Thx DUO2 nano material structure at 561 MHz quantum gyro-magnetic

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Abstract. We present an experimental of muon-hadron tunneling chain investigation with new methods of Thx DUO2 nano structure based on Josephson’s tunneling and Abrikosov-Balseiro-Russel (ABR) formulation with quantum quadrupole interacting with a strongly localized high gyro-magnetic optical field as encountered in high-resolution near-field optical microscopy for 1.2 nano meter lambda-function. The strong gradients of these localized gyro-magnetic fields suggest that higher-order multipolar interactions will affect the standard magnetic quadrupole transition rates in 1.8 x 10^3 currie/mm fuel energy in nuclear moderator pool and selection rules with quatum dot. For muon-hadron absorption in Josephson’s tunnelling quantum quadrupole in the strong confinement limit we calculated the inter band of gyro-magnetic quadrupole absorption rate and the associated selection rules. Founded that the magnetic quadrupole absorption rate is comparable with the absorption rate calculated in the gyro-magnetic dipole approximation of ThxDUO2nano material structure. This implies that near-field optical techniques can extend the range of spectroscopic measurements for 5-45 MHz at quantum gyro-magnetic field until 561 MHz deployment quantum field at $B$ around 455-485 tesla beyond the standard dipole approximation. However, we also show that spatial resolution could be improved by the selective excitation of ABR formulation in quantum quadrupole transitions.

1. Introduction
Quantum entanglement between physically separated systems is a resource that is essential for implementing many quantum information processing. The vast majority of entangled muon-hadron sources that are in use in various laboratories around the world today rely on spontaneous parametric down conversion in $\chi$ crystals to find out of new fuel energy on nuclear ordered chain reaction. However, our research recently demonstrated new methods of source with Abrikosov-Balseiro-Russell (ABR) formalism in non-Abellian system and Josephson’s tunneling [1] such as

$$i \cong \sum_{\alpha} x_{\alpha} |\alpha >,$$

which muon-hadron pairs were generated through non degenerate four-muon scattering. In ABR formalism, the parametric $\chi$ has resulted by a few equations consists of

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\[
\sum_{j} \sum_{\beta \gamma \delta} \chi_{\beta}^{\gamma} \chi_{\gamma}^{\delta} \left( \mu \beta | V | \gamma \delta \right) < \chi | C V | \gamma \equiv \sum_{\beta \delta} \left( \mu \chi \beta | V | \gamma \delta \right) \rho_{\beta \delta}
\]

\[
< \Phi | H \chi | \Phi^+ > = \chi^{**}
\]

For fast neutron floating at 1.8 x 10^3 currie/mm, the microstructure in Dirac’s condition was symbolized by \( \Phi \) and if not at Abellian-system was denoted by \( \Phi^+ \). This condition including of Schwinger transmutation by \( \chi^* \) and the invariant denoted by \( \chi^\dagger \) for non-Abellian system in quantum quadrupole for 455 tesla gyro-magnetic on ThxDUO2 nano material structure [3]. The design of the experiment with Catch-Nuc and Interstellar Nuclear Beam equipments [2] to produce correlated photon-pairs in dispersion-shifted Thx nano structure near 1.1 nano Lambda-function.

Nano structures interacting with optical near fields do not necessarily behave in the same way as nanostructures interacting with far-field radiation the response of a quantum well when it is excited by the diffracted field of an aperture causes the enhancement of quadrupole transitions, giving rise to a modified absorption spectrum of the quantum well.

In this paper we focus on the interaction of a spherical of Thx DUO2 nano structure with quantum quadrupole a highly confined gyro-magnetic optical near field. It was shown that such fields could be generated near laser-illuminated sharply pointed tips.

1.1. Quantum Quadrupole Wave Functions (Strong Confinement)

We assume that a spherical quantum dot is made from a direct band gap conductor for which the bulk gyro-magnetic dipole transitions are allowed between the valence band and the conduction band. In a generic manner, we assume that the valence band has a p-like character and that the conduction band has an s-like character. The latter assumption is commonly encountered for several conductors such as Th\(_x\)O\(_{1.7}\). Adopt this geometry and approximate the fields near the tip by an oscillating magnetic dipole oriented along the tip axis. In the research reported it was demonstrated that this is a reasonable approximation and that the dipole moment can be related to the computationally determined field enhancement factor using by Volkov’s detector and Multi Channel Spectroscopy Nuclear Beam at LHC-CERN nuclear reactor [4].

![Figure 1. Volkov’s detector](image1)

(Courtesy of Betha Group LHC-CERN nuclear reactor, Lyon, France, 2016)

![Figure 2. Multi Channel Spectroscopy Nuclear Beam](image2)

(Courtesy of Betha Group LHC-CERN nuclear reactor, Lyon, France, 2016)

The two fundamental differences between the work reported here and the earlier experiments are the wavelength of operation at 749 nm versus 1537 nm, and the use of a linear configuration as opposed to a Sagnac-loop configuration. After floating of 1.8 x 10^3 currie/mm muon-hadron scattering in nuclear chamber, the barrier from Thx has resulted to be hold of anti-neutrino particle existing. This is a good condition for finding out of new fuel energy in nuclear reactor before we continued to Josephson’s tunneling condition after the muon-hadron floating, and based on a few equations in ABR...
formalism, the quantum-correlations approaching will be an adjustment the critical value of pump wavelength by Th$_x$DUO$_2$nano-structure [5].

The quantum theory of four-wave interactions in Th$_x$ nano-structure has developed by ABR formalism with very simplicity equations such as:

$$\frac{\partial A_1}{\partial z} = -\frac{\alpha}{2} A_1 + i \chi \left| A_1 \right|^2 A_1$$
$$\frac{\partial A_2}{\partial z} = -\frac{\alpha}{2} A_2 + i \chi \left[ 2 \left| A_1 \right|^2 A_2 + A_3^2 \right]$$

In these equations, the field amplitudes of the pump signal and idler waves, respectively, and $\alpha$ is the attenuation coefficient of the Th$_x$nano-structure according to $P(z) = P(0) e^{-\alpha z}$ where $P$ is power and $z$ is propagation distance.

1.2 ABR Formalin Model

The analysis described above applies equally well to four muon-hadron interactions in any type of Th$_x$nano material matrix of nuclear structure. The advantages of using quantum correlations for demonstrating nonlinear-Th$_x$ nuclear structure effects arise from several novel properties: the nonlinear coefficient is enhanced in small-core a few $\mu$m$^2$ which support a single transverse mode over an extremely broad wavelength range (370 nm – 1600 nm). These four properties combine to allow efficient interactions to occur FPS which are either much less efficient or not possible at all in standard Th$_x$nano-structure nuclear.

| Table 1. Various properties of the Th$_x$DUO$_2$nano material structure in FPS |
|--------------------------|------------------|
| Th$_x$ properties         | Value            |
| Length                   | 1.36$\mu$m       |
| Core diameter            | 1.89$\mu$m       |
| Attenuation              | 92.4 dB/nm       |
| Cutoff wavelength        | < 571$\mu$m      |
| $\lambda_0$              |                  |
| Mode A :                 | 749 ± 4.1$\mu$m  |
| Mode B :                 | 743 ± 4.1$\mu$m  |
| $D_{slope}$              |                  |
| Mode A :                 | 0.64 ps          |
| Mode B :                 | 0.68 ps          |
| $\gamma$                 | 97.5 ( W nm)$^{-1}$ |

Source: courtesy of Betha Group LHC-CERN nuclear reactor, Lyon, France, 2016

Strong confinement is achieved if the Bohr radii of electron $b_e$ and $b_h$ hole are much larger than the radius of the quantum quadrupole. We assume the mentioned conditions in gyro-magnetic for 545 MHz to 561 MHz quantum gyro-magnetic can express the wave function band as

$$\Psi^E(r) = \frac{1}{\sqrt{|V_0|}} u_{e,0}(r) \xi^e(r)$$

Here \( u_{c,0}(r) \) is the conduction band Bloch function (with lattice periodicity) that has the corresponding eigenvalue \( k = 0 \), and \( V_o \) is the volume of the unit cell.

2. Methodology

2.1. Muon-Hadron Quadrupole in Josephson’s Tunneling

The gyro-magnetic quadrupole interaction on muon-hadron for Josephson’s tunneling \( \hat{H}^Q \) can be represented as

\[
\hat{H}^Q = \hat{\Psi}^+(r)H^Q(r)\hat{\Psi}(r)d^3r
\]

The interband terms are found by substitution of Eq. (6) and its adjoint into Eq. (7), thus (Levy, V., et. all, 2015) The group delay is then plotted as a function of wavelength and fitted to a low-order polynomial up to \( \chi^2 \) or \( \chi^3 \). The first derivative of the group-delay curve, normalized to the length of the Th, microstructure under test, gives the parameter GVD, \( D \). The Dirac’s condition will be supporting to existing of twin-photons at Abellian-system.

2.2. A subsection Absorption Rates in ThxDUO Nano Structure

To compare the magnetic dipole and the magnetic quadrupole absorption rates in strongly confined optical fields consider a quantum dot in the vicinity of a laser-illuminated metal tip. The strongest light confinement is achieved when the metal tip is irradiated with light polarized along the tip’s axis. For this situation.

![Figure 3](image)

**Figure 3.** illustrates the comparison of ThxDUO2 in magnetic dipole and magnetic quadrupole (Courtesy of Betha Group LHC-CERN nuclear reactor, Lyon, France, 2016)

2.3. Discussion of the ThxDUO Nano Material Structure with Quantum Quadrupole

We analyze absorption rates for quantum dots with the two different radii, \( a = 5 \) nm and \( a = 10 \) nm. For \( a = 5 \) nm the magnetic quadrupole transition is excited at a wavelength of \( \lambda \approx 500 \) nm; the magnetic dipole transition, at \( \lambda \approx 550 \) nm. The quadrupole transition for a quantum gyro-magnetic of radius \( a = 10 \) nm occurs at \( \lambda \approx 615 \) nm, and the magnetic quadrupole transition at \( \lambda \approx 630 \) nm.

![Figure 4](image)

**Figure 4.** The Th, DUO2 nano structure at 489.3 teslas gyro-magnetic field after blasting by muon hadron absorption in 1.8 x 10^3 curie/mm(Courtesy of Betha Group LHC-CERN nuclear reactor, Lyon, France, 2016)
According to quantum quadrupole magnetic-spin and magnetic resonance, which are expressed by Equations (3) until (6) that was describing how strongest impact from muon-hadron bombarding to Fermi-Dirac interstellar area wide in Josephson’s tunneling. However, using by ABR formalism for Th$_{x}$DUO$_{2}$nano material structure in 1.8 x 10^{10} currie/mm the wide is 0.001127 x 10^{-10} meters having magnetic field deflection on the resonance of spin-rotate around 6772.55 cm per each Fermi’s cloud active reaction. This matter in 510 MHz up to 545 MHz magnetic-spin frequency with Na$_2$SO$_3$ liquid moderator’s water-cooling at reactor chamber. For showing up the impact and existing of Fermi-Dirac’s surface effect caused by Anderson’s tunnel for floating of thermal neutron electrical charge in quantum quadrupole magnetic-spin also resonance, it has figured out from Gell-Mann spectroscopy. The Volkov’s detector is specified to have 10 nm pass bands centered at either 740 nm or 760 nm. The pass band center of these it can be tuned in wavelength by slightly rotating them such that the incident wave is no longer normal to the surface.

**Table 2. The properties of quantum magnetic field states for Th$_{x}$DUO$_{2}$nano material.**

| Materials  | Quantum magnetic-spin value | Quantum states                      |
|------------|-----------------------------|------------------------------------|
| Th$_{x}$   | 7.2104/eV                   | $C_{klf}^F; E_{(FD,F)}$            |
|            | 7.8384/eV                   | $C_{klf}^F; E_{(FD,F)}$            |
|            | 7.8551/eV                   | $C_{klf}^F; E_{(FD,F)}$            |

Source: courtesy of Betha Group LHC-CERN nuclear reactor, Lyon, France, 2016

The fitting parameter $a_1 = 0.027$ counts/pulse is the total photon detection efficiency, which agrees within the margin of error with the independently measured value of 4 ± 1%. The fitting parameter $b_1 = 8.7x10^{-9}$ counts/muon-hadron is the leakage through the detection filter and/or the contribution of spontaneous Raman scattering. In this experiment, FPS, Josephson’s scattering, and linear loss are all of the same order of magnitude. Based on the formulation for Fermi-Dirac’s active cloud in coherent Compton’s wavelength, will be adjoined of critical modulation phonon’s vibration and Cooper’s pair cloud such as.

**Figure 5.** Th$_{x}$DUO$_{2}$nano materials structure was scattering material where one counter is used to trigger the acquisition and the order is taken to be the PCMs signal at 561 MHz quantum gyro-magnetic (Courtesy of Betha Group LHC-CERN nuclear reactor, Lyon, France, 2016)

For efficient detection of the signal-idler pairs, pump muon-hadron suppression by greater than 90 dB is required. We obtain this suppression by use of three diffraction gratings (Richardson Grating Laboratories, 600 lines/nm, nominally blazed for 800 nm) arranged so that two different spectral regions can be detected on separate photon-counting modules (PCMs). The PCMs are available devices (Perkin-Elmer, model SPCM-AQR-16), which count individual photons at 750 nm wavelength with a quantum efficiency of ≃ 75% for new fuel energy in nuclear ordered chain reaction
especially on Th$_2$DUO$_2$ nano material with Josephson’s tunnelling and ABR formalism according for new method in nuclear reactor.

3. Conclusions
We have analyzed higher-order multipolar muon-hadron absorption interactions between Th$_x$ DUO$_2$ nano structure with quantum quadrupole and a strongly confined gyro-magnetic optical field. Expressions have been derived for the quadrupole interaction Hamiltonian, the associated absorption rate, and selection rules. The magnetic quadrupole absorption strength depends on the bulk properties of the material (ABR formalism) as well as on the envelope functions (confinement functions). When the quantum quadrupole with radius $a$ interacts with the confined optical field produced by a sharply pointed tip, the ratio between the magnetic quadrupole absorption rate and the electric dipole absorption rate can be as high as 561 MHz frequency for $a = 10$ nm. Magnetic quadrupole transitions could be ignored in the extreme near field. This was done to separate between tip and quantum dot smaller than muon-hadron flux around $1.8 \times 10^3$ curie/mm and 485-tesla gyro-magnetic field for Josephson’s tunneling. Moreover, the values were used to count individual photons at 750 nm wavelength with a quantum efficiency of $\geq 75\%$ for new fuel energy in nuclear ordered chain reaction especially on Th$_2$DUO$_2$ nano material with Josephson’s tunneling and ABR formalism according for new methods in nuclear reactor.

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