
Macroscopic Quantum Phenomena And Coherence In Superconducting Networks

evidence of macroscopic quantum phenomena and conscious ... - retarded waves are exchanged.[13] intriguingly, observable macroscopic quantum phenomena is evidenced by retroaction, ie: receiving information from the future. **hosten and kwiat** established evidence of reverse-direction causality when they detected a shift in a beam of polarized light moving between air and glass that was **an introduction to macroscopic quantum phenomena and ...** - an introduction to macroscopic quantum phenomena and quantum dissipation reviewing macroscopic quantum phenomena and quantum dissipation, from the phenomenology of magnetism and superconductivity to the presentation of alter-native models for quantum dissipation, this book develops the basic material **an introduction to macroscopic quantum phenomena and ...** - the way macroscopic quantum phenomena and quantum dissipation are pre-sented to the reader. usually, they are introduced through phenomenological equations of motion for the appropriate dynamical variables involved in the problem which, if one neglects dissipative effects, are quantized by canonical methods. **chapter 1 macroscopic quantum phenomena - wmidw** - macroscopic quantum phenomena. ss d r-r-t (2001 -2018) chap. 1 - 2 i. foundations of the josephson effect macroscopic systems quantum mechanics physical quantities (, \hbar ,...) are quantized usually thermal motion masks quantum properties no quantization effects on a macroscopic scale **macroscopic quantum phenomena - tu graz** - macroscopic quantum phenomena 1.1 the macroscopic quantum model one of the main principles of quantum mechanics is the fact that physical quantities such as energy or momentum are, under certain conditions, quantized. that is, they can have only discrete values. how- **macroscopic quantum phenomena - vixra** - macroscopic quantum phenomena have been observed in a system that is based on fermions, which include protons, electrons, and all other matter particles. other systems exhibiting macroscopic quantum phenomena have been based on photons, a type of boson, which mediate the forces between matter. **superconductivity and other macroscopic quantum phenomena.** - the macroscopic occupation of a single quantum state. john bardeen as first suggested by fritz london, superconductivity and superfluid flow in liquid helium are macroscopic quantum phenomena. they depend on the fact that the energy states of even macroscopic objects, although closely spaced, are discrete, and on the statistical mechanics of **on macroscopic quantum phenomena in biomolecules and cells** - on macroscopic quantum phenomena in biomolecules and cells from levinthal to hopfield d. raković,1 m. dugić,2 j. jeknić-dugić,3 m. plavšić,4 s. jaćimovski,5 j. Šetrajić 6,* 1 university of belgrade, faculty of electrical engineering, serbia 2 university of kragujevac, faculty of science, dept of physics, serbia 3 university of niš, faculty of science, dept of physics, serbia **macroscopic quantum phenomena from the coupling pattern ...** - quantum description, while classical mechanics, a limiting case of quantum mechanics, is sufficient for the description of the macro world. in the face of new challenges from macroscopic quantum phenomena, viz, quantum features may show up even at macroscopic scales, this common belief now requires a much **chapter 1 macroscopic quantum phenomena - wmidw-muenchen** - macroscopic quantum effects are observable example: quantization of flux through a loop why? electrons form highly correlated system 1. macroscopic quantum phenomena 1.1 the macroscopic quantum model of superconductivity. **on macroscopic quantum phenomena in biomolecules and cells ...** - hopfield-like quantum-holographic memory/propagator of the open macroscopic quantum (sub)system of cell's particular spatial quantum ensemble of (noninteracting and dynamically noncoupled) chemically identical proteins of β -type (and their corresponding biomolecular targets) [41, 42]infeynman'**macroscopic quantum phenomena from pairing in superconductors** - macroscopic quantum phenomena from pairing in superconductors nobel lecture, december 11, 1972 by j. r. schrieffer university of pennsylvania, philadelphia, pa. i. introduction it gives me great pleasure to have the opportunity to join my colleagues john bardeen and leon cooper in discussing with you the theory of superconduct- ... **macroscopic quantum phenomena in superconducting junctions** - macroscopic quantum phenomena in superconducting junctions davide massarotti, february 8, 2019. the josephson junction is a nonlinear dissipationless device. these unique features make the junction the primitive building block of all superconducting qubits. the quantum nature of **macroscopic quantum phenomena in interacting bosonic ...** - macroscopic quantum phenomena in interacting bosonic systems: josephson ow in liquid ^4He and multimode schr odinger cat states by tyler james volko a dissertation submitted in partial satisfaction of the **pathways toward understanding macroscopic quantum ...** - there is no a priori good reason why quantum phenomena in macroscopic objects cannot exist. 2.2. pathway 2: from the correlation, coupling and criticality perspectives in this sequel paper we explore how macroscopic quantum phenomena can be measured or understood from the behavior of quantum correlations which exist in a quantum system of **macroscopic quantum tunneling - assets** - we begin by surveying what macroscopic quantum phenomena are, and what is the significance of searching for such phenomena, thereby locating macroscopic quantum tunneling in the broad perspective of physics in the new century. 1.1 the cat and the moon it should not be necessary to elaborate on a young-type interference experiment, **macroscopic quantum phenomena discovered in ice - phys** - macroscopic quantum phenomena

discovered in ice 21 July 2015, by lisa zyga (a) between two oxygen atoms, a proton can reside in one of two sites due to bonding with the oxygen at two **macroscopic quantum phenomena from pairing in superconductors** - macroscopic quantum phenomena from pairing in superconductors nobel lecture, december 11, 1972 by j. r. schrieffer university of pennsylvania, philadelphia, pa. i. introduction it gives me great pleasure to have the opportunity to join my colleagues john bardeen and leon cooper in discussing with you the theory of superconductivity. **dynamics after macroscopic quantum phenomena or system ...** - dynamics after macroscopic quantum phenomena or system-bath approach ajl@80: challenges in quantum foundations, condensed matter, and beyond university of illinois at urbana-champaign, il, usa 2018.03.29-31 ping ao shanghai center of quantitative life sciences and physics department shanghai university, shanghai, china **chapter 1 macroscopic quantum phenomena - wmidw** - no quantization effects on a macroscopic scale - superconductivity: macroscopic quantum effects are observable e.g. quantization of flux through a loop why: electrons form highly correlated electron system 1. macroscopic quantum phenomena 1.1 the macroscopic quantum model of superconductivity **macroscopic quantum effects in biophysics and consciousness** - classified as macroscopic quantum phenomena of the second kind, and being interesting to us). numerous different macroscopic quantum phenomena of the second kind, some of them belonging to the fast developing field of the quantum computing and information, unequivocally sharpen the overall problem of universal validity of quantum mechanics. ... **superfluidity and superconductivity - macroscopic quantum ...** - macroscopic quantum phenomena single particle quantum mechanics many particle quantum mechanics macroscopic quantum phenomena. 4 this phenomenon, called bose-einstein condensation, is at the heart of superfluidity and superconductivity * 1925. 5 why did it take 70 years to realize bec in a **macroscopic quantum resonators (maqro) - forexiv** - quantum phenomena, such as quantum superpositions involving massive macroscopic objects, provide novel insights into those fundamental questions. maqro allows entering a new parameter regime of macroscopic quantum physics addressing some of the most important questions in our current **macroscopic quantum resonators (maqro) - springer** - intuitive phenomena of quantum theory prevail on the scale of macroscopic objects? this is at the heart of the so-called "quantum measurement problem", also known as schrödinger's cat paradox. another question is whether quantum superposition states of massive macroscopic objects are consistent **macroscopic quantum coherence and computing** - the final proceedings for macroscopic quantum coherence and computing, 7 June 2004 -10 June 2004 quantum computing. quantum phenomena in superconducting devices: phase-space and charge-space nanodevices dissipation and decoherence in mesoscopic systems macroscopic quantum coherence in physical **resonance phenomena in macroscopic quantum tunneling: the ...** - we present a theoretical study of the resonant quantum behavior for a macroscopic superconducting system interacting with an external microwave at proper frequency. here we consider a system described by a double well potential, a rf-squid, in the extremely underdamped regime. numerical simulations for resonant phenomena have been per- **solid state physics iv -part ii : macroscopic quantum ...** - solid state physics iv-part ii : macroscopic quantum phenomena koji usami (dated: december 01, 2014) we review the classic examples of macroscopic quantum phenomena, which are not the main concern of the lecture. as examples, we study the phonon concept appeared in investigating the specific heat of insulators and the **mössbauer, the x-ray edge, and macroscopic quantum effects** - mössbauer, the x-ray edge, and macroscopic quantum effects james p. sethna laboratory of atomic and solid state physics, cornell university, ithaca, new york 14853-2501 (dated: november 10, 2012) we discuss materials science examples of quantum phenomena embedded in a macroscopic, classical world. **research article on macroscopic quantum phenomena in ...** - research article on macroscopic quantum phenomena in biomolecules and cells: from levinthal to hopfield dejanrakovi t,1 miroljubdugi t,2 jasinajekni t-dugi t,3 milenkoplav i t,4 stevoja timovski, 5 andjovan etraj iit6,7 facultyofelectricalengineering,universityofbelgrade,belgrade,serbia **entangled quantum dynamics via macroscopic quantum ...** - of how microscopic quantum behavior begets macroscopic phenomena. macroscopic quantum tunneling (mqt) is the aggregate tunneling behavior of a many-body wavefunction, where we refer to "macroscopic" throughout this thesis as a system with a large number of dynamical microscopic degrees of freedom. the **macroscopic quantum coherence and tunnelling in a double ...** - account of its relation to macroscopic quantum phenomena which are expected to be exhibited by the magnetic flux trapped within a squid (caldeira and leggett 1983a). in the case where the double well is symmetric (and hence unbiased) the associated phenomena are referred to as quantum coherence. these have been studied in **macroscopic quantum resonators (maqro)** - quantum physics challenges our understanding of physical reality and space-time. testing quantum phenomena like quantum superpositions involving macroscopic objects provides novel insights into fundamental questions such as: do the laws of quantum physics still hold for macroscopic objects or do yet unknown effects set a limit for massive objects? **92 book reviews an introduction to macroscopic quantum ...** - inevitably, quantum mechanics and, in particular, macroscopic quantum phenomena. as amir caldeira points out in the introduction to his new book, macroscopic objects (blameless cats in particular) have previously been used to demonstrate some of the bizarre effects predicted if quantum mechanics is applied beyond the realm of the microscopic. **macroscopic superpositions and quantum information processing** - • a quantum system is 'macroscopic' if there

exists such that where f is quantum fisher information and \hat{O} is an additive operator. $f = O(n)$ for a product state $f = O(n^2)$ for a GHZ state • applicable to arbitrary spin systems. • operational meaning in relation to quantum metrology. where **macroscopic effect of quantum gravity: graviton, ghost and ...** - keywords: quantum gravity . 1. introduction . macroscopic quantum effects are quantum phenomena that occur on a macroscopic scale. to date, there are two known macroscopic quantum effects: superfluidity at the scale of liquid helium vessel and superconductivity at the scale of superconducting circuits of electrical current. **macroscopic quantum phenomena in josephson structures** - importance in the context of macroscopic quantum phenomena. among these, quantum decay via macroscopic quantum tunneling mqt merits great attention, as does energy level quantization elq and other phenomena intrinsic to quantum mechanics at a macroscopic level, such as macroscopic quantum coherence in a superconducting quantum interfer- **helium phase diagram(s) - dartmouth college** - k and 1 atm pressure. the normal liquid undergoes a transition to a superfluid phase at and below 2.1 k; this phase is dominated by macroscopic quantum mechanical phenomena: the liquid flows without viscosity (among other curious behaviors). the diagram below on the left shows the phase diagram for the mass-4 isotope of he (4he). on the right ... **quantum phenomena in semiconductor structures c') dr m pepper** - include macroscopic quantum phenomena, in particular quantum coherence and the quantum hall effect. 'fto i la' #- l_ l.- u| quantum phenomena in semiconductor structures dr m pepper cavendish laboratory university of cambridge madingley road cambridge cb3 0he contract: daja-85-c-0045 a **two dimensional materials where such macroscopic quantum ...** - where such macroscopic quantum phenomena occur are limited by the lesser of the binding energy and the degeneracy temperature of the bosons. high critical temperature cuprate superconductors set the present record of ~100 k. here we propose a design for artificially structured materials to rival this record. the main ele- **properties of macroscopic quantum effects and dynamic ...** - so-called macroscopic quantum effects(mqe) refer to a quantum phenomenon that occurs on a macroscopic scale. such effects are obviously different from the microscopic quantum effects at the microscopic scale as described by quantum mechanics. it has been experimentally demonstrated [1-17] that macroscopic quantum effects are the phenomena ... **quantum tunneling - santa rosa junior college** - •quantum tunneling falls under the domain of quantum mechanics: the study of what happens at the quantum scale. this process cannot be directly perceived, but much of its understanding is shaped by the macroscopic world, which classical mechanics cannot explain. •quantum tunneling occurs when particles move ;rmmnmcnvnnngnngmpmmncrq **macroscopic quantum effects in ...** - been amply demonstrated that quantum processes reignsupremeat thelengthscales of atomic physics and below. however, tunneling even in the macroscopic world (mqt) is theoretically possible (1). the claims of quantum theory are all-encom-passing: tunneling can occur under any circumstances- acarcanindeedpassharm-lessly through a mountain rather ... **consciousness and quantum theory: strange bedfellows** - quantum theory that explain why it is thought to involve consciousness in some way. 1. quantum mechanics quantum mechanics is the framework for fundamental theories of microscopic systems and phenomena. there are quantum theories of various kinds of elementary particles, **dielectric anomaly in ice near 20 k: evidence of ...** - dielectric anomaly in ice near 20 k: evidence of macroscopic quantum phenomena fei yen*,†,‡ and tian gao*,§ †key laboratory of materials physics, institute of solid state physics, hefei institutes of physical science, chinese academy of sciences, 350 shushanhu road, hefei 230031, p. r. china **macroscopic superconductivity - cornell university** - state ii". units 1{5 covered basics, quantum transport, structural order, and mag-netism; units 7 and 8 will cover the microscopic (bcs) pairing theory of supercon-ductivity, and "exotic" superconductivity (meaning high critical temperatures and/or unusual pairing symmetries). virtually none of this is needed for macroscopic super- **macroscopic quantum carrier transport ~odelin~** - scaling problems, quantum interference phenomena are typically not important. furthermore, in many device situations, a large number of the sub-bands are filled. there- fore, the details of sub-band structure have little consequence. this is the motivation for developing a macroscopic transport model with the lowest-order qm corrections.

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