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How Does Retrocausality Help? **ROD SUTHERLAND** (Centre for Time, University of Sydney, Sydney NSW 2006 Australia; rod.sutherland@sydney.edu.au).

The aim of this talk is to look at the various advantages gained by incorporating retrocausality into the formalism of quantum mechanics. For example, in seeking to describe an underlying reality existing between measurements, the inclusion of retrocausality makes it straightforward to achieve both Lorentz invariance and locality, as well as permitting the proposed picture of reality to reside in 4D spacetime rather than configuration space. Another consequence is that it becomes possible to give a more comprehensive and richer mathematical description. In particular, a Lagrangian formulation can be achieved, thereby encapsulating all equations of motion and conservation laws in a single expression. Also, the usual restriction to a statistical description in the quantum realm can be usefully avoided when formulating the energy-momentum tensor for quantum gravity.

What Do We Really Mean by "Retrocausation" in Quantum Theory? **RUTH E. KASTNER** (Department of Philosophy, University of Maryland, College Park, MD 20742; rkastner@umd.edu.)

Several proposed interpretations of quantum theory are termed "retrocausal" by their proponents and/or by researchers investigating various possibilities for interpreting quantum theory. This talk considers several extant "retrocausal" interpretations and identifies some areas of commonality, as well as areas of divergence among these approaches. Special attention is paid to the tension between causation understood as a dynamic notion, capable of playing a role in event formation, and the block world ontology seemingly implied by such approaches. Proposed resolutions of this tension are discussed and assessed.

Is Retrocausation an Illusion? **HENRY P. STAPP**, (Lawrence Berkeley Laboratory,University of California, Berkeley California, 94720).

Orthodox quantum mechanics forbids retrocausation. Apparent scientific demonstrations of retrocausation usually involve (true or psuedo) random number generators whose macroscopic outputs are not immediately consciously witnessed by, or known to, anyone. Hence, like Schroedinger's cat, both outcomes continue to exist, until someone experiences something that depends on the outcme, which can be later and involve no retrocausality. The apparent retrocausal effect should disappear if an outside observer witnesses the RNG output as soon as it is created.

Examining the Nature of Retrocausal Effects in Biology and Psychology, **JULIA A. MOSSBRIDGE** (Department of Psychology, Northwestern University, 2029 Campus Drive, Evanston, IL 60208 and Institute of Noetic Sciences, 625 2nd St., Suite 200, Petaluma, CA 94952-5120; jmossbridge@noetic.org).

It has been clear for decades that nonconscious psychological and physiological processes often have more access to information about past events than conscious processes have. However, in the past few years it has become clear that nonconscious processes also have better access to future events that we generally think of as "unpredictable." For example, multiple laboratories have reported physiological and psychological changes associated with future events that are designed to be unpredictable by normal sensory means; these effects have been called presentiment effects or predictive anticipatory activity (PAA). Such phenomena seem to be examples of retrocausality at the macroscopic level.

In this talk I will discuss the characteristics of seemingly retrocausal effects in biology and psychology, such as PAA. The aim of this examination in general is to offer an analysis of the constraints posed by the characteristics of macroscopic retrocausal effects. Such constraints are critical to developing a physical theory to explain these effects, a theory that is currently lacking but sorely needed.

I will provide a brief introduction to recent meta-analyses of precognition and presentiment work, focusing on my work in the field, moving on to what we have learned so far about the characteristics of macroscopic retrocausal effects, and concluding with what remains to be done to fully scope out the constraints that will help shape an accurate physical model of macroscopic retrocausal effects.

John von Neumann's wave function Collapse and Information Transfer, **KARLA GALDAMEZ (**Nascent Systems Inc.; galdamez.k.m@gmail.com).

John von Neumann's idea of measurement and conscious observation through the problem of the photon-eye interaction as a platform for information transfer between human subjects is investigated. The probability of wave function collapse as the

photon enters the eye is explored via density matrix formalism and non-linear Schrodinger equations to understand collapse mechanism and information transfer process.

Experimental equipment built for investigation consists of a silicon avalanche photodiode, a high power light emitting diode (LED) source centered at 530 nm, a set of single and multi-mode fibers, and an attenuator. Attenuator is built as an optical lens device containing two convex lenses for improved efficiency of source-to-output via optical fibers, and appropriate density filter for variations of input current. The system is driven by a high power, 1-channel LED driver with pulse modulation device. The desired result is achieved with single photon generation within the range of 35 % efficiency of photodiode along with production of pseudo random generation pulse output.

This optical equipment has been elaborated to produce photon pulse lengths varying in integration times of 100 milli-second, 10 milli-second and 1 milli-second. Statistical analysis of single photon production will be presented with appropriate histogram data corresponding to each integration time along with analysis of equipment's capability. Resulting human evoked potential associated to single photon stimulation will be discussed in relation to the possibility of wave function collapse in the brain as compared to the retinal structure. Intention effects will be further presented demonstrating significant p-value below 0.1 in waveform differences of mental intention presence. Simultaneously, time reversal solution to brain neural-cortical processes will be briefly discussed.

Testing the Chronology Protection Conjecture, **DICK BIERMAN and JACOB JOLIJ (**University of Groningen, The Netherlands; d.j.bierman@uva.nl).

So-called presentiment phenomena appear to violate causality and would allow for the creation of a time-loop paradox akin to the grandfather paradox.

According to Hawking's chronology protection conjecture these anomalous presentiment phenomena therefore are strictly forbidden. However the correlations between current psychophysiological behaviour and a random future condition are low and therefore any single signal can never exactly 'predict' the future. It is as if grandson has some potential to travel back but the road toward place & time of his grandfather (before this grandfather has off spring) is extremely difficult to find due to all kind of probalistic features (noise). One could argue that in such a case there is some limited potential for time-travel. The fact that scientists have found rather consistently these effects at least inconflict with Paul Levinson's 'The chronology protection case' where he argues that scientists close to finding a means to time travel will be murdered.

In recent experiments using the EEG signal as predictor for the future random stimulus condition we constructed pre-stimulus EEG templates for each of the two possible futures. With the help of these templates it was possible to make a straightforward prediction about the future which was correct in ~55% of the cases (where 50% is expected).

In a follow up experiment we will use this template based prediction to actually present the condition that wasn't predicted. This is known as bilking and some authors do argue such an experiment would cause the collapse of our cosmos. We will investigate the effect of bilking in one random part of the trials on the presentiment effects in other trials.

Curious Correlations within Pre- and Post-Selected Ensembles, **ELIAHU COHEN[1]*, H. H. WILLS[1]**, **and YAKIR AHARONOV[2]** ([1]Physics Laboratory, University of Bristol, Tyndall Avenue, Bristol BS8 1TL, UK; [2]School of Physics and Astronomy, Tel Aviv University, Tel Aviv 6997801, Israel and Schmid College of Science, Chapman University, Orange, CA 92866, USA; eliahu.cohen@bristol.ac.uk).

Quantum mechanics is unique by allowing a non-trivial final boundary condition for every system. Moreover, the combination of two boundary conditions, evolving forward and backward in time, creates a richer description of quantum reality. This description becomes apparent when employing a special kind of quantum measurement known as "weak measurement".

I will shortly review the theory and some achievements in this field, both theoretical and experimental. Then I will present a few novel results regarding quantum correlations and nonlocality: 1. Nonlocal correlations between particles in a pre- and post-selected ensembles described by *product states*. These surprising correlations, which obviously do not occur in pre-selected-only ensembles, are known to violate the basic "pigeonhole principle". 2. Nonlocal correlations between apparent empty boxes. This feat exposes a unique top-down logical structure of quantum mechanics. 3. Counterfactual correlations resulting from the quantum Zeno effect.

The Arrow of Time for Continuous Quantum Measurements, **ANDREW N. JORDAN** (Department of Physics and Astronomy, University of Rochester, Rochester, NY 14627-0171)

The question of the causation and time reversibility of quantum mechanics with measurements is one that has been debated for some time. In this talk, I will present recent work exploring our ability to distinguish the forward from the reverse measurement records of continuous quantum measurements. The question involves both the conditions for the time-reversibility of the quantum trajectory equations of motion, as well as statistical distinguishability of the arrow of time. I will present the case with and without postselection on the final state, and connect the issue to a similar topic in nonequilibrium statistical physics and nonequilibrium thermodynamics. I will also discuss how this proposal can be implemented with continuously monitored superconducting quantum circuits.

Negative Momentum: An Outcome of TSVF Offering a Novel Account of Retrocausation, **AVSHALOM C. ELITZUR** ([1]*Iyar*, The Israeli Institute for Advanced Research, POB 651, Zichron Ya'akov 3095303, Israel; avshalom@iyar.org.il).

Among many surprising predictions of the Two-State-Vector Formalism (TSVF), "odd values" such as negative momenta and mass are especially intriguing. Although expected mainly under weak measurements, recent advances enable detecting them with ordinary measurement as well. We argue that these different cases present a continuum. Similarly, although odd values are expected under special pre- and post-selections, a similar continuum may exist between these and ordinary cases. Thus, negative momentum/mass may be part and parcel of all quantum interactions, although not always observable.

This "continuum hypothesis" offers an intuitive explanation for cases like Interaction-Free Measurement (IFM), where an event that did not occur still exerts causal effects. By combining retrocausality with exchanges of both normal and odd values, histories that indicate that a quantum never occurred are the result of at least two histories, evolving along both time directions, that cancel each other's momentum/mass exchanges. We explore some offshoots of this hypothesis and further ways to explore it.

Towards Disentanglement, **KEN WHARTON** (Department of Physics and Astronomy, San Jose State University, San Jose CA 95192-0106; kenneth.wharton@sjsu.edu).

By far, the biggest promise of quantum retrocausation is the possibility of providing a spacetime-local account of entanglement. (Retrocausation resolves all the no-go theorems.) Although proof-of-principle retrocausal examples exist for special cases, no one has yet developed a general framework that can locally account for every possible entanglement experiment. This talk will outline how close this task is to completion. The central elements are: 1) A small set of universal gates from which one can build any entanglement experiment; 2) A natural hidden variable model that can locally encode traditional qubit parameters as well as additional retrocausal influences; 3) An all-at-once analysis of the entire experiment, where future measurements act as boundary constraints on past parameters. Preliminary indications appear promising for a successful underlying explanation of all entanglement phenomena, along the lines of how statistical mechanics provides an underlying explanation of thermodynamics.

Causality in a Quantum World, **FABIO COSTA** (School of Mathematics and Physics, University of Queensland, 4067 St Lucia, Queensland, Australia; f.costa@uq.edu.au)

Quantum mechanics challenges some of the most entrenched views about the world. If one attempts to explain quantum correlations in terms of pre-existing objective properties, one is forced to posit non-local or retrocausal mechanisms. However, such mechanisms cannot be exploited directly to transfer information. This motivates two related questions: is it possible to define causal structures for quantum systems, without introducing hidden, unobserved, mechanisms? Is there room, within quantum theory, for more exotic situations, that are incompatible with any definite causal structure? Reviewing a series of recent results, I will discuss in what way both questions can be answered positively. A quantum generalisation of classical causal models shows that typical quantum experiments, such as violation of Bell inequalities, can be understood in terms of definite, local, future-oriented causal structure. The framework, however, allows for more general causal structures, that display genuinely quantum features. Such quantum causal structures lead to advantages in information processing, over and above 'ordinary' quantum computers. Surprisingly, some of such resources are physically realisable and a first proof-of-principle was recently demonstrated.

A Retrocausal Model of the Quantum Computational Speedup, **GIUSEPPE CASTAGNOLI** (Elsag Bailey Quantum Information Laboratory, Via Puccini 2, 16154, Genova, Italy; giuseppe.castagnoli@gmail.com).

Bob, the problem setter, hides a ball in one of four drawers. Alice, the problem solver, is to locate it. Quantumly, this can be done by opening just one drawer. We explain this *quantum speedup* with retrocausality.

The initial measurement randomly selects a drawer number out of a mixture of the four possible numbers. Bob unitarily sends it into the desired number of the drawer with the ball. This yields the algorithm input state to Bob and any external observer, not to Alice. It would tell her the solution of the problem before she opens any drawer. To Alice, the projection of the quantum state induced by the initial measurement should be retarded to the end of her search. The input state to her remains the mixed one. Alice sends it unitarily into a mixture of tensor products, each a drawer number and the corresponding solution. She reads – measures – the solution corresponding to the number chosen by Bob.

Mathematically, this final measurement could select back in time any part of the random outcome of the initial measurement. The assumption it selects half of it explains the speedup. This projects the input state to Alice on one of lower entropy where she knows half of the information that specifies the number of the drawer with the ball. The quantum algorithm is a sum over classical histories in each of which Alice knows in advance one of the possible halves of the information and opens only the drawers required to find the other half. A similar explanation applies to quantum oracle computing.

From Time-Symmetry to Retrocausality? How Quantisation Makes a Difference, **HUW PRICE (**Trinity College, Cambridge CB2 1TQ, UK; hp331@cam.ac.uk).

Does time-symmetry imply retrocausality? I present a simple argument that shows how the answer can be "no" in the classical case but "yes" in the corresponding quantum case. I will also explain an interesting sense in which the quantum feature in question is the same one at the heart of Bell's Theorem, and suggest that this provides further motivation for retrocausal explanation of the Bell correlations.

The Quantum-Classical Correspondence and Robustness under Time Reversal, **ELIAHU COHEN[1*], H. H. WILLS[1]**, and **YAKIR AHARONOV[2]** ([1]Physics Laboratory, University of Bristol, Tyndall Avenue, Bristol BS8 1TL, UK; [2]School of Physics and Astronomy, Tel Aviv University, Tel Aviv 6997801, Israel and Schmid College of Science, Chapman University, Orange, CA 92866, USA; eliahu.cohen@bristol.ac.uk).

Weak measurement, based on a very weak von Neumann coupling, is a unique kind of quantum measurement with numerous theoretical and practical applications. In contrast to other measurement techniques, it allows to gather a small amount of information regarding the quantum system, with only a negligible probability of collapsing it. Importantly, a long sequence of weak measurements can be thought of as a single projective measurement.

I claim that classical variables appearing in the macro-world, such as centre of mass, moment of inertia, pressure and forces, result from a multitude of quantum weak measurements performed in the micro-world. By augmenting this description with a final boundary condition and employing the notion of "classical robustness under time-reversal" I will draw a quantitative borderline between the classical and quantum regimes. The significant role of macroscopic systems in amplifying and recording quantum outcomes will directly follow. Moreover, a unique choice of the final boundary condition is shown to yield an almost accurate time-reversal symmetry of macroscopic systems.

Bohm Pilot Wave Post-Quantum Theory, **JACK SARFATTI** (Internet Science Education Project, 805 Chestnut St., San Francisco, CA, 94133; jacksarfatti@comcast.net).

David Bohm's 1952 pilot-wave/hidden-variable (aka "beable") interpretation of quantum theory is generally misunderstood by quantum theorists. It has undergone a major revolution in recent times by Antony Valentini and Roderick Sutherland. Valentini has shown that the Born probability rule and its consequent no entanglement signaling restriction is not fundamental. Sutherland has shown how Yakir Aharonov's retrocausal "weak measurement" technique applies in the Lagrangian framework to give a relativistically covariant post-quantum theory in which there is two-way action-reaction between the qubit pilot waves and their beables (e.g. classical particles and classical local gauge fields) without the need for configuration space for many-particle entanglement. Indeed, the no-signaling restriction and the Born probability rule come from the lack of direct back-reaction of beables on their pilot waves. This is very much like removing the back-reaction of matter on spacetime geometry to eliminate gravity as curvature. The post-quantum back-reaction corresponds to computation around closed timelike curves in which P = NP with profound implications for quantum cryptography code breaking. We expect Prigogine pumped open dissipative structures with Frohlich macro-quantum coherence to be post-quantum systems.

Perceiving the Future News: Evidence for Retrocausation, **DALE E. GRAFF** (Psi-Seminars-Initiatives, Hamburg, PA 19526, USA; mtnviewer@dalegraff.com).

Thirty three exploratory psi investigations were recently performed using Conscious State Psi and Dream State Psi protocols for photographic material that did not exist at the time of the psi sessions. Results would provide evidence for retrocausation if the future photographs had influenced the sessions' data. The psi targets were Associated Press news photographs published in an area newspaper on a specific page three days in the future. These photographs were taken one day after the psi sessions. Following each psi session, and prior to the photograph's existence, perceptions were recorded in project records and email transmission for date validation. Feedback was provided when the photograph was published. There were two phases: Phase I was an informal investigation performed by the author to evaluate project feasibility. Phase II was a formal investigation with a colleague 1,000 miles from the author and the area newspaper location.

All data were evaluated by direct comparison to the intended photographs using numerical assessment scales and noting unique features. Data from 21 of the 33 sessions (64%) yielded sketches and narratives with medium and high degrees of correlations with the future news photographs. Visual informational content of these future news photographs had interacted with the brain's cognitive processes in a retrocausal sense. The future photographs affected the sessions' data. A subconscious interaction between the future and the present or past may be an on-going feature of the mental and physical universe. Suggestions for follow-on investigations into retrocausation, precognition and related phenomenon are provided.

Prediction of Truly Random Future Events Using Analysis of Prestimulus Electroencephalographic Data, **STEPHEN L. BAUMGART*, MICHAEL S. FRANKLIN, HIROUMI K. JIMBO, SHARON SU, and JONATHAN SCHOOLER** (Theoretical and Applied Neurocausality Laboratory, Santa Barbara, CA 93117; Department of Psychology and Brain Sciences, University of California at Santa Barbara, Santa Barbara, CA 93106; baumgart@tanclab.org).

Our hypothesis is that prestimulus physiological data can be used to predict truly random events tied to perceptual stimuli (e.g., lights and sounds). Furthermore, it may be possible that meditation and feedback induce or enhance the prestimulus effect. We will also test the validity of models such as CIRTS (Consciousness Induced Restoration of Time Symmetry).

Our experiment presents light and sound stimuli to a human subject connected to a 32-channel Electroencephalography (EEG) system. The experiment is run in either "prediction mode", where the stimuli are selected using a quantum random number generator (qRNG), or in "feedback mode", where stimuli are selected using prestimulus data. The proper algorithms are derived from previous experiments or models. Three experiments are planned for the current year: 1) a study of baseline event-related potential, 2) a study of meditation effects, and 3) a study of feedback effects. Experiments 1 and 2 use equally weighted probabilities for sound, light, and null (no stimulus) stimuli. All stimuli in experiments 1 and 2 are selected using a qRNG. Experiment 1 will run on a large sample of general population in order to establish the baseline event-related potential. Experiment 2 will use an experimental group of experienced meditators and a control group of non-meditators. Experiment 3 differs in that it uses only binary light and sound stimuli with equal probability. Experiment 3 runs combine "prediction mode" trials from the qRNG with "feedback mode" trials. A pilot project of experiment 3 found a z-score of 5.3 over 4375 trials.

Empirical Retrocausality: Testing Physics Hypotheses With Parasychological Experiments, **YORK DOBYNS** (University of Kentucky, 309 Culpepper Road, Lexington, KY 40502; yorkdobyns@gmail.com).

In 2011, Daryl Bem published a report of nine parapsychological experiments showing evidence of retrocausal information transfer. Earlier in 2016, the team of Bem, Tressoldi, Rabeyron, and Duggan published the results of a meta-analysis containing 81 independent replications of the original Bem experiments (total of 90 with the originals). This much larger database continues to show positive results of generally comparable effect size, thus demonstrating that the effects claimed by Bem can be replicated by independent researchers and greatly strengthening the case for empirically observed retrocausation.

Earlier (2011) work by this author showed how a modification of one of Bem's original experiments could be used to test the mechanism implicitly proposed by Echeverria, Klinkhammer, and Thorne to explain how retrocausal phenomena can exist without any risk of self-contradictory event sequences ("time paradoxes"). In light of the new publication and new evidence, the current work generalizes the previous analysis which was restricted to only one of Bem's experimental genres (precognitive approach and avoidance). The current analysis shows how "transparent" modifications (that is, invisible to the experimental subjects) can be made in Bem's other experimental genres of retroactive priming, retroactive habituation, and retroactive facilitation of recall to test the EKT anti-paradox mechanism. If the EKT hypothesis is correct, the modified experiments, while continuing to show replicable retrocausal phenomena, will also show a characteristic pattern of distortion in the statistics of the random selections used to drive the experiments.

Accommodating Retrocausality with Free Will, **ELIAHU COHEN[1]*, H. H. WILLS[1], and YAKIR AHARONOV[2]** ([1]Physics Laboratory, University of Bristol, Tyndall Avenue, Bristol BS8 1TL, UK; [2]School of Physics and Astronomy, Tel Aviv University, Tel Aviv 6997801, Israel and Schmid College of Science, Chapman University, Orange, CA 92866, USA; eliahu.cohen@bristol.ac.uk).

Retrocausal models of QM add further weight to the conflict between causality and the possible existence of free will. We analyze a simple closed causal loop ensuing from the interaction between two systems with opposing thermodynamic time arrows, such that each system can forecast "future" events for the other. The loop is avoided by the fact that the choice to abort an event thus forecasted leads to the destruction of the forecaster's past. Physical law therefore enables prophecy of future events only as long as this prophecy is not revealed to a free agent who can otherwise render it false. This resolution is demonstrated on an earlier finding derived from the Two-State-Vector Formalism (TSVF), where a weak measurement's outcome anticipates a future choice, yet this anticipation becomes apparent only after the choice has been actually made. To quantify this assertion, "weak information" is described in terms of Fisher information. We conclude that an "already existing" future does not exclude free will nor invoke causal paradoxes. On the quantum level, particles can be thought of as weakly interacting according to their past and future states, but causality remains intact as long as the future is masked by quantum indeterminism.

Guiding Quantum Histories with Intermediate Decomposition of the Identity, **SKY NELSON-ISAACS** (Department of Physics, San Francisco State University, San Francisco, CA, USA; theskyband@gmail.com).

The effect of a carefully chosen measurement action at an intermediate time to influence the future (or past) outcome of a quantum system is examined. Since vector inner products are agnostic to time, we may calculate the overlap between a current state and a future (or past) state just as readily as between states at the same moment. Thus, the mathematics indicates that a current measurement action can reach recursively into future (or past) states and return a concrete probability amplitude. Of particular interest is the notion of intermediate decomposition of a quantum history. We decompose a state at an intermediate time into a complete set of states in a new basis chosen to distinguish particular outcomes, analogously to a prism breaking white light into distinguishable colors. As a result the observer may be able to modify the probability distribution in an intentional manner. The properties of extended histories of quantum events are discussed, with attention paid to the manner in which such a history might be guided toward a meaningful outcome. The notion of what makes an outcome "meaningful" is made precise and the results of such a measurement on the entropy of a system are examined. Comparisons to the quantum Zeno effect, and the transactional and other models of quantum theory are also discussed.

Delayed Choice Experiments and the Problem of Free Will in Quantum Mechanics, **ALEXEY NIKULOV**, (Institute of Microelectronics Technology, Russian Academy of Sciences, 142432 Chernogolovka, Moscow District, Russia; nikulov@iptm.ru).

According to the orthodox quantum mechanics (Dirac's jump) the mind of the observer creates an eigenstate of the dynamical variable that is being observed. The observer as human being has free will to choose any dynamical variable and any time of its observation. He can create any eigenstate of both an observed particle and a distant particle of the EPR pair due to the EPR correlation. In this way the observer can create the past with the help of a delayed choice experiment. Such omnipotence of the mind of the observer provokes a logical contradiction. Two human beings having free will can choose different dynamical variables of the EPR pair and create different eigenstates of the same quantum system. In order to escape this logical absurdity we must doubt the free will of human beings, as Gerard 't Hooft persuades, or must cast doubt on the existence of other human beings. Einstein was right warning that we cannot escape solipsism following Heisenberg, Bohr and others creators of quantum mechanics. It will be substantiated in this work that the aspiration to describe paradoxical quantum phenomena at any cost led to contradiction of our reason with itself.

Neural-Dynamics and Time Reversal Under the Concept Of 'Double Me', **KARLA GALDAMEZ (**Nascent Systems Inc.; galdamez.k.m@gmail.com).

Hankel equations with a backward-type solutions are explored corresponding to dynamics of inhibitory and excitatory cell groups within the human brain. Within these cell groups, a correlation to the olfactory bulb dynamics is realized for which time reverses dynamically as an 'implosion' from an otherwise expanding wave packet pattern in neural-cortical activity as explored by W. Freeman & G. Vitiello's work, Refs. [1, 2]. A remote possibility of parallel universe connectivity to the environment parameter within Everett's Many Worlds' interpretation of quantum theory and Vitiello's concept 'Double Me' is further investigated to formulate an energy conserving closed system within an alternative interpretation of the brain's dissipative model. Bial Grant No. 255/12

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[2]. W. Freeman & G. Vitiello, Phys. Letts. A 379, pp. 2198 (2015)