

qm2 highlights 2001–2005

Source: <http://sci.tech–archive.net/Archive/sci.physics/2005–12/msg01851.html>

- *From:* vznuri@xxxxxxxxxx
 - *Date:* 26 Dec 2005 16:58:57 –0800
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hi all. we have 4 yrs and over 10,000 msgs of great dialogue on "qm2", a mailing list dedicated to reexamination of quantum mechanics, particularly relative to local hidden variable (LHV) theories & debate.

esp. seeking those in academia & research.
hope to hear from you.

<http://groups.yahoo.com/group/qm2/>

my holiday gift to you:
below Ive included links & highlights from
our dialogue collected over its lifetime. wish this could
be even more thorough.

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charter

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This is a group of active inquirers into the boundaries of existing quantum mechanics theory seeking to resolve its deep mysteries.

Members respect the premiere and established status of the theory and those who uncovered and built it, but also intuitively suspect it is not the final word and perhaps we are on the cusp of a "paradigm shift" into a new theory.

Special emphasis is on cooperatively exploring and developing local hidden variable theories that are consistent with known quantum mechanics, both theoretical and experimental.

Members are committed to the highest standards of mathematical and scientific rigor, but also seek the most elegant simplifications.

Members regularly read scientific papers and books on the subject, and have high respect for each other and especially the scientists currently working in the field.

recurring themes

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- efficiency & other loopholes in bell experiments
- investigation into solitons, oscillons
- nelson, feynes & the derivation of QM from brownian motion, "stochastic QM"
- active vs passive locality, jarret locality, also called parameter vs. outcome independence
- do QM axioms/formalism forbid FTL signalling??
- DFT, density functional theory, by kohn
- SED, stochastic electrodynamics by marshall, santos
- CAs, gliders, fredkin–wolfram theory
- is the wavefunction real or not??
- what about the "peaceful coexistence" between QM and general

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relativity?

- does QM imply FTL signalling or not? is it impossible?
- decoherence
- photoelectric effect
- collapse of wvfn & measurement problem

popular science

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nova special, "the elegant universe", full realaudio/quicktime videos

<http://www.pbs.org/wgbh/nova/elegant/program.html>

new scientist articles on quantum theory

<http://www.newscientist.com/hottopics/quantum/>

alternate view column by john g. cramer, analog magazine

http://www.npl.washington.edu/AV/av_index.html

scientific american on "spintronics", i.e. QM computing

<http://www.sciam.com/article.cfm?articleID=0007A735-759A-1CDD-B4A8809EC588EEDF>

quantum information science by nielsen

<http://www.sciam.com/article.cfm?articleID=0005C8BF-1B88-1D9B-815A809EC5880000>

interactions between quantum mechanics & gravity

http://www.ananova.com/yournews/story/sm_497419.html
<http://www.aip.org/enews/physnews/2002/split/573-1.html>

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wolfram/fredkin, physics as information flow

<http://www.usnews.com/usnews/issue/020819/misc/19cosmos.htm>

"god is the machine" by kevin kelly, on the new algorithmic metaphor in physics and science, wolfram, etc

<http://www.wired.com/wired/archive/10.12/holytech.html>

aspen institute of physics, for the real hotshots

<http://www.nytimes.com/2001/08/28/science/physical/28ASPE.html>

online realaudio of wick book for science series,
good overview

<http://www.cuny.tv/series/science/listen.htm>

economist on the standard model of physics nearing "theory of everything"
oct 2000

http://www.economist.com/displayStory.cfm?Story_ID=387866

the physics of the web, on small world graphs, by barabasi

<http://physicsweb.org/article/world/14/7/09>

"most beautiful science experiment" poll, electron double slit the winner, other runners up

<http://physicsweb.org/article/world/15/9/2>

<http://www.nytimes.com/2002/09/24/science/24BEAU.html>

new plans for a \$6–8 billion international supercollider

<http://www.siliconvalley.com/mld/siliconvalley/news/local/4393180.htm>

physicsweb magazine, free online

<http://physicsweb.org/toc/world>

history of quantum theory & the resistance of the nobel committee

<http://physicsweb.org/article/world/15/8/7>

is the moon there when nobody looks? reality & the quantum theory, david mermin, physics today, 1985

<http://digitalphysics.org/Publications/Mer85/scan.htm>

mysteries of QM, entanglement, etc

<http://physicsweb.org/article/world/12/12/19>

max planks role in the invention of QM

<http://physicsweb.org/article/world/13/12/8>

SQUIDs as macroscopic schroedinger cat experiments

<http://physicsweb.org/article/world/13/8/3>

fundamentals of quantum information theory

<http://physicsweb.org/article/world/11/3/9/1>

life & times of dirac & his contribution to QM

<http://physicsweb.org/article/world/11/2/9>

crank physics/humor

the seven warning signs of bogus science, by robert park.

<http://chronicle.com/free/v49/i21/21b02001.htm>

did einstein cheat? by john farrell. salon magazine.
quotes mainstream physicists on the many crank/crackpot
challenges to special relativity circulating in cyberspace.
important to read for anyone working on alternative theories.

<http://dir.salon.com/people/feature/2000/07/06/einstein/index.html>

how einsteins relativity is used in GPS calculations & corrections.
by clifford will. shows how the theory is applied & proven
every day.

<http://www.physicscentral.com/writers/writers-00-2.html>

the john baez crackpot index

<http://math.ucr.edu/home/baez/crackpot.html>

are you a quack?? by siegel

<http://www.physics.sunysb.edu/~siegel/quack.html>

britney spears explains the finite barrier quantum well

<http://www.britneyspears.ac/physics/fbarr/fbarr.html>

scientific integrity & misconduct

the bogdanov brothers & physics "bogosity".. real or a hoax??

<http://www.theregister.co.uk/content/6/27894.html>

<http://chronicle.com/free/2002/11/2002110501n.htm>

<http://www.nytimes.com/2002/11/09/arts/09PHYS.html>

<http://www.nytimes.com/2002/11/17/weekinreview/17JOHN.html>

the sch"on affair on nanoscale transistors, bell labs

<http://www.salon.com/tech/feature/2002/09/16/physics/>

<http://www.physicstoday.org/vol-55/iss-11/p15.html>

victor ninov and element 118, livermore–berkeley labs

<http://www.aip.org/pt/vol-55/iss-9/p15.html>

articles

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richard gill survey on pro–realist dissident positions

<http://www.math.uu.nl/people/gill/Preprints/vaxjo.pdf>

travis norsen on bell's thm.. excellent online material, 5 parts

http://www.objectivescience.com/articles/tn_bell_1.htm

http://www.objectivescience.com/articles/tn_bell_2.htm

http://www.objectivescience.com/articles/tn_bell_3.htm

http://www.objectivescience.com/articles/tn_bell_4.htm

http://www.objectivescience.com/articles/tn_bell_5.htm

norsen's innovative undergraduate research seminar syllabus

<http://www.phys.washington.edu/~norsen/qmi.htm>

eric dennis of caltech on lewis little & bohm theories

http://www.objectivescience.com/articles/ed1_quantum_dissidents.htm

http://www.objectivescience.com/articles/ed2_quantum_dissidents.htm

quantum measurement FAQ by paul budnik.. nice online summary of some of the debate..

<http://www.mtnmath.com/faq/meas-qm.html>

kevin browns essays on physics

<http://www.mathpages.com/home/iphysics.htm>

projection postulate of qm & the measurement problem, summary

<http://mathpages.com/home/kmath446.htm>

measurement in quantum theory, stanford encyclopedia of philosophy

<http://plato.stanford.edu/entries/qt-measurement/index.html>

quantum entanglement & bells thm

<http://www.mathpages.com/home/kmath521/kmath521.htm>

michael hall & marcel reginatto derive schroedinger eqn from
new formulation of heisenberg uncertainty eqn

<http://www.newscientist.com/news/news.jsp?id=ns99992209>

"QM and the copenhagen interpretation".
nice summary lecture of the EPR paradox by eugen merzbacher, author
of a definitive book on QM, from 2000.

<http://web.gc.cuny.edu/ashp/nml/copenhagen/Merzbacher.htm>

a brief review of elementary quantum chemistry by david sherrill

<http://vergil.chemistry.gatech.edu/notes/quantrev/quantrev.html>

physics in crisis? by sidney nagel

<http://www.aip.org/web2/aiphome/pt/vol-55/iss-9/p55.html>

visualizing quantum decoherence, by scott johnson, animated
web page

<http://www.geocities.com/scjphysicist/decoh.html>

profiles

paul davies, famous QM popularizer

<http://physicsweb.org/article/world/15/9/7>

john bell, by whitaker

<http://physicsweb.org/article/world/11/12/8>

stephen wolfram is an interesting character &
coming up with some cool stuff

<http://www.newscientist.com/opinion/opinterview.jsp?id=ns230516>

<http://www.forbes.com/asap/2000/1127/162.html>

more on the fredkin–wolfram theme from a popular magazine
with excellent writing

<http://www.theatlantic.com/unbound/flashbks/unifiedtheory.htm>

weinberg on wolfram

<http://www.nybooks.com/articles/15762>

american spectator carver mead interview

<http://www.spectator.org/AmericanSpectatorArticles/carver.htm>

discover magazine on david deutsch

http://www.discover.com/sept_01/featsecret.html

roger penrose

<http://www-gap.dcs.st-and.ac.uk/~history/Mathematicians/Penrose.html>

great contributions to QM by nonphysicists: Balmer (Swiss schoolteacher)
and Rydberg's advancement of the hydrogen atom spectrum equations

<http://www-gap.dcs.st-and.ac.uk/~history/Mathematicians/Balmer.html>

<http://www-gap.dcs.st-and.ac.uk/~history/Mathematicians/Rydberg.html>

papers

Determinism beneath Quantum Mechanics
Author: Gerard 't Hooft (Spinoza)

Contrary to common belief, it is not difficult to construct deterministic models where stochastic behavior is correctly described by quantum mechanical amplitudes, in precise accordance with the Copenhagen–Bohr–Bohm doctrine.

<http://arxiv.org/abs/quant-ph/0212095>

What's wrong with Einstein's 1927 hidden-variable interpretation of quantum mechanics? Authors: Peter Holland

<http://www.arxiv.org/abs/quant-ph/0010091>

don howard, "who invented the copenhagen interpretation? a study in mythology"

<http://www.nd.edu/~dhoward1/Copenhagen%20Myth%20A.pdf>

Toward an architecture for quantum programming
Authors: S. Bettelli, L. Serafini, T. Calarco

http://www.economist.com/printedition/displayStory.cfm?Story_ID=1682086

sci paper

<http://arxiv.org/abs/cs/0103009>

NMR molecular 1024 bit photography/storage milestone by khitrin et al

<http://www.arxiv.org/abs/quant-ph/0208136>

shor's algorithm in 7qubit quantum computer
"Experimental realization of Shor's quantum factoring algorithm using nuclear magnetic resonance"

<http://www.arxiv.org/abs/quant-ph/0112176/>

Quantum mechanics from a Heisenberg–type equality

Authors: Michael J. W. Hall, Marcel Reginatto

<http://www.arxiv.org/abs/quant-ph/0201084/>

experimental violation of a bells inequality with efficient detection; rowe, kielpinski,meyer,sackett,itano,monroe,wineLand. nature vol 409,p791(feb 2001)

<http://www.boulder.nist.gov/timefreq/general/pdf/1400.pdf>

Kielpinski, David et al, "Recent Results in Trapped–Ion Quantum Computing",

<http://www.arxiv.org/abs/quant-ph/0102086>

Schrodinger equation from an exact uncertainty principle, 18pp

Authors: Michael J. W. Hall, Marcel Reginatto

<http://www.arxiv.org/abs/quant-ph/0102069/>

collapse models, by pearle, wavefunction collapse as a dynamical physical process

<http://www.arxiv.org/abs/quant-ph/9901077/>

"a LHV model of QM correlation exploiting the detection loophole" by N Gisin & B Gisin

<http://www.arxiv.org/abs/quant-ph/9905018/>

D.F. Styer, "Common misconceptions in quantum mechanics", Am. J. Phys., v.64, p.31 (1996).

<http://www.oberlin.edu/physics/dstyer/TeachQM/misconnzz.pdf>

deutsch has looked at the LHV situation in QM in this controversial paper, "information flow in entangled quantum systems". I think this is a very important analysis proposing "locally inaccessible information".

<http://xxx.lanl.gov/abs/quant-ph/9906007>

hess & phillipp on a possible loophole in the bell experiments based on timing, summary, published in proc. nat. acad. sci. makes bell loophole theories more respectable.

<http://www.nature.com/nsu/011129/011129-15.html>

<http://arxiv.org/abs/quant-ph/0103028>

rebuttal by Gill et al., PNAS v.99, p14632 (2002).

<http://www.pnas.org/cgi/reprint/99/23/14632.pdf>

violation of bells inequalities with a local theory of photons, by suppes et al

<http://www.arxiv.org/abs/quant-ph/9606020/>

decoherence & the appearance of the classical world in QM theory, 2nd ed, introduction to the theory of decoherence, basic concepts & interpretation, by Zeh

<http://arxiv.org/abs/quant-ph/9506020>

100 years of the quantum, by tegmark & wheeler

<http://arxiv.org/abs/quant-ph/0101077>

<http://www.sciam.com/2001/0201issue/0201quicksummary.html>

"clearing up mysteries, the original goal" by jaynes

<http://bayes.wustl.edu/etj/articles/cmystery.pdf>

photons, schmotons. by john baez, sci.research.physics
moderator. extremely advanced mathematical treatment between QM
and QFT.

<http://math.ucr.edu/home/baez/photon/>

density functional theory by kieron burke, large free 115p book

<http://dft.rutgers.edu/kieron/beta/>

where did the laws of physics come from? by victor stenger.
on how almost all physical laws originate from considerations
of mathematical invariance.

<http://arXiv.org/abs/physics/0207047>

the original infamous schroedinger cat paper of 1935, translated

<http://www.tu-harburg.de/rzt/rzt/it/QM/cat.html>

THE UNREASONABLE EFFECTIVENESS
OF MATHEMATICS IN THE NATURAL
SCIENCES by Eugene Wigner

<http://nedwww.ipac.caltech.edu/level5/March02/Wigner/Wigner.html>

visual QM

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Scott C Johnson and Thomas D Gutierrez, "Visualising the phonon

wave function", Am. J. Phys, 70(3) 227–237 (2002)

<http://www.geocities.com/scjphysicist/johnsonpaper.zip>

online quantum mechanics tutorial/animations/visualization done on supercomputers by micheilsen and de raedt

<http://rugth30.phys.rug.nl/quantummechanics/>

visual quantum mechanics by thaller and a review

<http://www.kfunigraz.ac.at/imawww/vqm/index.html>

<http://www.mathphysics.com/harrell/pub/thaller.html>

a java simulation of spin entangled particles.
by mcintyre at oregon state university.

<http://www.physics.orst.edu/paradigm5/spins/>

an NSF project for visual
QM.. to be incorporated into undergrad and HIGH SCHOOL
curriculums .. online interactive software

<http://phys.educ.ksu.edu/>

undergrad QM, bell, entanglement, photon experiments

Entangled photons, nonlocality and Bell inequalities in the
undergraduate laboratory

<http://www.arxiv.org/abs/quant-ph/0205171/>

Entangled photon apparatus for the undergraduate laboratory

<http://www.arxiv.org/abs/quant-ph/0205172/>

published in these papers

Dehlinger and Mitchell, "Entangled photons, nonlocality, and Bell
inequalities in the undergraduate laboratory", *ibid.* p.903.

Dehlinger and Mitchell, "Entangled photon apparatus for the
undergraduate laboratory", Am. J. Phys, v.70, p.898 (2002).

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holbrow undergraduate QM & bell experiments

http://departments.colgate.edu/physics/research/Photon/photon_quantum_mechanics.htm

very difficult magneto–optical atom trapping successfully accomplished
by an undergraduate senior at reed college

http://web.reed.edu/community/newsandpub/feb2002/features/quantum_mechanic/quantum_mechanic_index.html

weihls bell experiment including raw data for one orientation

<http://www.quantum.univie.ac.at/research/bellexp/>

A Zoology of Bell inequalities resistant to detector inefficiency
by Serge Massar, Stefano Pironio, Jeremie Roland, Bernard Gisin

<http://www.arxiv.org/abs/quant-ph/0205130/>

general starting points

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physics FAQ & related FAQs by scott chase

<http://www.weburbia.com/physics/faq.html>

quantum computation web site

<http://www.qubit.org/>

about.com, quantum theory starting point

<http://physics.about.com/cs/quantumphysics/index.htm?terms=quantum>

<http://physics.about.com/msubquantum.htm>

eric weisstein, quantum mechanics entry on physicsworld.
technical & mathematical angle. encyclopedia entry style.
schroedinger equation, full standard derivations of particle in

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a well, simple harmonic oscillator, etcetera. absolutely outstanding

<http://scienceworld.wolfram.com/physics/QuantumMechanics.html>

NSF site, "the particle adventure", high traffic, educational, artistic

<http://particleadventure.org/particleadventure/index.html>

quantum computing software by wallace

<http://www.dcs.ex.ac.uk/~jwallace/simtable.htm>

new directions

using the entire world as a particle detector via
datamining of seismology data, with "strange nuggets"
apparently successfully detected

<http://www.wired.com/wired/archive/11.02/matter.html>

promising marriage of quantum mechanics and game theory

<http://physicsweb.org/article/world/15/10/7>

possibility that einsteins relativity may be adjusted based
on new supersensitive observations, according to Magueijo

<http://www.nytimes.com/2002/12/31/science/physical/31LIGH.html>

california institute of physics, investigating SED-like
alternative theories involving ZPF etcetera

<http://www.calphysics.org/aboutcipa.html>

trevor marshall, Phd, founder of stochastic electrodynamics
theory. "QM is not science"

<http://homepages.tesco.net/~trevor.marshall/antiqm.html>

summer 2001 conference on SED, list of participants
& lecture titles

<http://www.bu.edu/simulation/conferences.html>

Gerard Westendorp, electric circuit analogs of fields.
converting the periodic circuit elements to cells gives
a CA dynamics for various physical laws. see also wick
page 32 for a CA type model of the schroeding wavefn.

<http://www.xs4all.nl/~westy31/Electric.html>

fredkin's theory on digital physics, expanded

<http://digitalphysics.org/>

nice AMS article on solitons by Terng and Uhlenbeck
with all the equations

<http://www.ams.org/notices/200001/200001-toc.html>

reductionistic particle physicists are being challenged by solid
state physicists for the definitive metaphor of reality.
on laughlin (nobel prize winner) & pines' shot across the
bow of particle & reductionistic physics

<http://www.nytimes.com/2001/12/04/science/physical/04SQUA.html>

the theory of everything, by laughlin, proc. nat. acad. sci, vol 97 #1

<http://www.pnas.org/cgi/reprint/97/1/28.pdf>

the middle way, by laughlin, PNAS, vol 97 #1

<http://www.pnas.org/cgi/reprint/97/1/32.pdf>

oscillons— dating to experiments by faraday. a remarkable
model for particle physics

<http://www.aip.org/physnews/graphics/html/oscillons.html>

mathematical analysis of oscillons by crawford & rieke

<http://xxx.lanl.gov/abs/patt-sol/9804005/>

quantum computing

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a physics free introduction to the quantum computation model

stephen a fenner, computational complexity column

<http://arxiv.org/abs/cs.CC/0304008>

quantum computing and communications

paul e black, richard kuhn, carl williams

<http://hissa.nist.gov/~black/Papers/quantumCom.html>

adrian barenco, quantum physics and computers

<http://eve.physics.ox.ac.uk/NewWeb/Publications/oldftp.htm>

introduction to qm computing for non-physicists

eleanor rieffel

<http://arxiv.org/abs/quant-ph/9809016>

>>From Cbits to Qbits: Teaching computer scientists quantum mechanics
by david mermin

<http://arxiv.org/abs/quant-ph/0207118>

temple of quantum computing, by riley t. perry

http://home.swiftdsl.com.au/~chillers/TOOCv1_0.pdf

favorite books

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reflections on relativity.. amazing 500 page book..

<http://www.mathpages.com/rr/rrtoc.htm>

my favorite books on the subject. we had some commentary on wick's book.

david wick, the infamous boundary. by a mathematician who delves deeply into the history of the debate.

<http://www.amazon.com/exec/obidos/ASIN/0387947264/>

jim baggott, the meaning of quantum theory. undergraduate level, very accessible. covers mathematics & philosophy of the theory.

<http://www.amazon.com/exec/obidos/ASIN/019855575X/>

greenstein & zajonc, the quantum challenge. undergraduate, very accessible, coverage of many cutting edge experiments and theory.

<http://www.amazon.com/exec/obidos/ASIN/0763702161/>

what is qm? physics adventure.. perhaps the worlds most basic intro to qm... cartoons.. for very talented high schoolers

<http://www.amazon.com/exec/obidos/ASIN/0964350416/>

introducing quantum theory, a comic book format on the history.. excellent artwork & summary

<http://www.amazon.com/exec/obidos/ASIN/1874166374/>

and yet it moves: strange systems & subtle questions in physics by mark silverman

<http://www.trincoll.edu/~silverma/Books/ayim.html>

famous quotes

``all things are numbers."

—pythagoras

``the laws of nature are written in the language of mathematics."

—galileo

"Anyone who is not shocked by quantum theory has not understood it." —bohr

"There is no quantum world. There is only an abstract quantum mechanical description. It is wrong to think that the task of physics is to find out how Nature is. Physics concerns what we can say about Nature." —bohr

``The map is not the territory."

—alfred korzybski

"I think it is safe to say that no one understands quantum mechanics. Do not keep saying to yourself, if you can possibly avoid it, 'But how can it be like that?' because you will go 'down the drain' into a blind alley from which nobody has yet escaped. Nobody knows how it can be like that." —Richard Feynman

"Young man, in mathematics you don't understand things, you just get used to them."

—John von Neumann

"Niels Bohr brainwashed a whole generation of theorists into thinking that the job (interpreting quantum theory) was done 50 years ago."

—Murray Gell-Mann

"...to myself I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me."

—Isaac Newton

"The difference between science and religion is that the former wishes to get rid of mysteries whereas the latter worships them."

—Sidney Hook

"Physics is not a religion. If it were, we'd have

a much easier time raising money."
—Leon Lederman

"If all this damned quantum jumping were really here
to stay then I should be sorry I ever
got involved with quantum theory!" —schroedinger

"Physicists use the wave theory on Mondays, Wednesdays and Fridays,
and the particle theory on Tuesdays, Thursdays and Saturdays."
—W.H.Bragg

"God doesnt play dice with the universe." —Einstein

"This theory reminds me of the system of delusions of
an exceedingly intelligent paranoiac, concocted of
incoherent elements of thought. ... If correct,
it signifies the end of physics as a science."
—Einstein

"Imagination is more important than knowledge."
—Einstein

"I have little patience with scientists who take a board
of wood, look for its thinnest part
and drill a great number of holes where drilling is easy." —Einstein

"I have become an obstinate heretic in the eyes of my colleagues."
—Einstein

``As far as the laws of mathematics refer to reality,
they are not certain, and as far as they are
certain, they do not refer to reality." —Einstein

``No problem can be solved from the same consciousness that
created it." —Einstein

``I cannot seriously believe in [QM] because it cannot
be reconciled with the idea that physics should represent
a reality in time and space, free from spooky actions at
a distance." —Einstein

``The soothing philosophy—or religion?—of Heisenberg–Bohr
is so cleverly concocted that for the present it offers
the believers a soft resting pillow from which
they are not easily chased away. Let us therefore let them
rest. ... The religion does damned little for me." —Einstein

``I would not like to be driven into abandoning strict causality
without a great deal more opposition than has been
shown so far. The idea that an electron... _by its own
free decision_ chooses the moment and the

direction in which it wants to eject is intolerable to me.
If that is so, I'd rather be a cobbler or a clerk in a gambling
casino than a physicist." --Einstein

``The more success the quantum theory has, the sillier it looks."
--Einstein

``We often discussed his notions on objective reality.
I recall that during one walk Einstein suddenly stopped,
turned to me and asked whether I really believed that
the moon exists only when I look at it." --Pascual Jordan

``One should no more rack one's brain about the problem of
whether something one cannot know anything about exists
all the same, than about the ancient question of how
many angels are able to sit on the point of a needle.
But it seems to me that Einsteins questions are ultimately
always of this kind." --Pauli

``A great many people think they are thinking when they
are merely rearranging their prejudices." --William James

``This statistical interpretation is now universally accepted as
the best possible interpretation for quantum mechanics, even
though many people are unhappy with it. People had got used
to the determinism of the last century, where the present
determines the future completely, and they now have to get used
to a different situation in which the present only gives one
information of a statistical nature about the future.
A good many people find this unpleasant; Einstein has always
objected to it. The way he expressed it was: "The good God does
not play with dice". Schroedinger also did not like the statistical
interpretation and tried for many years to find an interpretation
involving determinism for his waves. But it was not successful
as a general method. I must say that I also do not like indeterminism.
I have to accept it because it is certainly the best that we can do
with our present knowledge. One can always hope that there will
be future developments which will lead to a drastically different
theory from the present quantum mechanics and for which
there may be a partial return of determinism. However, so long
as one keeps to the present formalism, one has to have this
indeterminism." --P.A.M. Dirac

``He believed that basically physics should be of a deterministic
character. And I think it might turn out that ultimately Einstein
will prove to be right, because the present form of quantum mechanics
should not be considered as the final form. There are great
difficulties. It is the best we can do up till now. I think that
it is quite likely that at some future time we may get an improved
quantum mechanics in which there will be a return to determinism and

which will, therefore, justify the Einstein point of view. We would have to pay for it in some way which we cannot yet guess at."

—P.A.M.Dirac

`` ... arguments on which the currently accepted interpretation of physics is based are not as decisive as they appear to be, but on the contrary, contain many significant loopholes." —De Broglie

``Quantum mechanics is magic." —Daniel Greenberger

"The theory of quanta can be likened to medicine that cures the disease but kills the patient."

—Hendrick Kramers

"Nothing is more interesting to the true theorist than a fact which directly contradicts a theory generally accepted up to that time, for this is his particular work."

—Max Planck

"A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it."

—Max Plank

``Two dangers constantly threaten the world: order and disorder."

—Paul Valery

``I feel that Einstein's intellectual superiority over Bohr, in this instance [debate over QM completeness], was enormous, a vast gulf between the man who saw clearly what was needed, and the obscurantist." —John Bell

``The wavefunction is not an observable but is not ... unobservable!"

—P. Bush

``the rather wraithlike wavefunction seems an appropriate vehicle to be the carrier of the veiled potentiality of quantum reality."

—j.c.polkinghorne

``We have always had a a great deal of difficulty understanding the world view that QM represents. At least I do, because I'm an old enough man that I haven't got to the point that this stuff is obvious to me. Okay, I still get nervous with it... You know how it always is, every new idea, it takes a generation or two until it becomes obvious that theres no real problem. I cannot

define the real problem, therefore I suspect there's no real problem, but I'm not sure there's no real problem."

—Richard Feynman

“Yes! Physics has given up. We do not know how to predict what would happen in a given circumstance, and we believe now that it is impossible—that the only thing that can be predicted is the probability

of different events. It must be recognized that this is a retrenchment in our earlier ideal of understanding nature. It may be a backward step, but no one has seen a way to avoid it.” —Richard Feynman

“One can even set up quite ridiculous cases.

A cat is penned up in a steel chamber, along with the following device...”

—schroedinger

“it is pretty clear why present qm theory not only does not use—it does not even dare to mention—the notion of a “real physical situation”. defenders of the theory say that this notion is philosophically naive, a throwback to outmoded ways of thinking, and that recognition of this constitutes deep new wisdom about the nature of human knowledge. I say that it constitutes a violent irrationality, that somewhere in this theory the distinction between reality and our knowledge of reality has become lost, and the result has more the character of medieval necromancy than science.”

—jaynes

“but surely the animal knows whether or not it is alive, without requiring human intervention to help it to that conclusion? perhaps we should conclude, therefore, that cat consciousness is as effective at determining quantum outcomes as is human consciousness. where then do we stop? can worms also collapse the wavefunction?”

—j.c.polkinghorne

“what exactly qualifies some physical systems to play the role of “measurer”? was the wavefunction of the world waiting to jump for thousands of millions of years until a single-celled living creature appeared? or did it have to wait a little longer, for some better-qualified system.. with a Phd?”

—bell

“Bell's theorem is the most profound discovery of science.”

—Henry Stapp

“Anybody who's not bothered by Bell's theorem has to

have rocks in his head."

--"anonymous distinguished princeton physicist"

``Who ordered that??"

--I.I.Rabi on discovery of the muon

``I know what I'M talking about. Do YOU know what YOU are talking about??"

--Per Bak

mailing lists

bell & bohm, by eric dennis

http://groups.yahoo.com/group/bell_bohm/

QM from GR, by david strayhorn

http://groups.yahoo.com/group/qm_from_gr/

lewis little TEWLIP

<http://groups.yahoo.com/group/TEWLIP/>

theory of everything mailing list, wei dai

<http://www.eskimo.com/~weidai/everything.html>

digital physics by plamen petrov

<http://groups.yahoo.com/group/digitalphysics/>

digital philosophy by fredkin

<http://groups.yahoo.com/group/digitalphilosophy/>

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• Prev by Date: [*Re: water pressure*](#)

qm2 highlights 2001–2005

- Next by Date: ***Re: A new TOE: Spring theory explains everything***
- Previous by thread: ***Quantized Elevator Gedankenexperiment?***
- Next by thread: ***American Buddhism – Critique of Science – Quotations by Dr. Frederick Lenz***
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