THE QUANTUM TIMES

AMERICAN PHYSICAL SOCIETY • TOPICAL GROUP ON QUANTUM INFORMATION

WINTER 2009 VOLUME 3, NUMBER 4

Quantum Information in the New Mexico Desert

The Twelfth Workshop on Quantum Information Processing ran for a full five days this year. The location was Santa Fe, New Mexico, where there was a cool layer of snow on the ground, but the chilies were nice and spicy. As a side note, the first night that I arrived, I learned from a friend that chilies are indigenous to North and South America, and it was only later (around the 1500s) that they spread to Asia and quickly integrated into the local cuisines. Most workshop attendees stayed in the historic La Fonda Hotel of Santa Fe (the current hotel was originally built in 1922, but supposedly, the owners can date inns at this location going back four hundred years). The La Plazuela restaurant inside the hotel featured an award-winning culinary team, but if you wished to hit the town, the local organizers were kind enough to provide a list of the best restaurants in the downtown area.

Each day of the workshop was full of new advances in the theory of quantum information processing. Below, I summarize three talks on the first day and one talk on each of the next three days (unfortunately I missed Friday).

The first day of the workshop featured a few talks on additivity in quantum information, so I focus on this topic. Additivity in quantum information theory falls in the realm of quantum Shannon theory, where a sender has available a large number of independent and identically distributed uses of a noisy quantum channel to transmit classical or quantum information to a receiver. Additivity concerns whether a given capacity expression should be maximized over one use of a noisy quantum channel, two uses, or all the way up to an arbitrary number of uses. If a given capacity is additive, then the channel capacity problem simplifies because we need only perform the maximization over one use of the channel. But a non-additive capacity generally means that we need to maximize over an arbitrary number of uses of the channel and this maximization is generally intractable.

Matt Hastings delivered the first talk on additivity. Workshop chair Andrew Landahl introduced Matt as the "Michael Phelps" of quantum information theory for 2008 because the local organizers invited him to give two talks due to his numerous important contributions to the field. Matt presented a counterexample that demonstrates that the classical capacity of a noisy quantum channel is not additive. Matt was a great presenter–he introduced the subject cleanly and outlined each step of his proof with care. Matt used a random construction of a noisy channel to show that there exists some choice from the ensemble of noisy channels that violates additivity. The details of his proof involve asymptotics and epsilon-nets. The additivity conjecture was open for quite some time and Matt finally solved it.

Graeme Smith then presented his joint work with Jon Yard on the "superactivation" effect in quantum Shannon theory. The Smith-Yard result made a splash in August of 2008, when they published their work in Science Magazine. Their result gives a violation of additivity for the quantum capacity. They showed that two particular noisy quantum channels (a Horodecki channel and a 50 percent erasure channel) can "superactivate" each other to send quantum information at a non-zero capacity, even though each individual channel has zero capacity on its own for transmitting quantum information. The proof of the result is

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Inside...

Amazingly enough, this issue marks the completion of our *third year* of publishing and that means we are just beginning our fourth year of existence as a topical group within the APS. In those years we have successfully instituted two student awards at the annual March Meeting, sponsored several full slates at that same meeting, and, hopefully, increased awareness of the fields of quantum information and quantum foundations.

As we continue to move forward, I, personally, hope *The Quantum Times* is filling a vital role in furthering our goals as a group. But sometimes it is difficult to tell. The APS has specifically suggested that unit newsletters regularly include letters to the editor and opinion pieces since such communication is vital to any group or organization.

Thus, I am calling on you, the readers, to submit content, particularly opinion pieces and letters to the editor concerning issues important to our community. It is vital to our long term health that we engage in open conversation. Details on submission may be found on page 4. I look forward to hearing from you!

ITD

QIP 2009 Local Organizers, l to r, a beardless Howard Barnum (LANL), Jim Harrington (LANL), Jon Yard (LANL), Andrew Landahl (UNM), and Cris Moore (UNM/Santa Fe Institute). *Photo by author.*

simple enough (consisting of a mere four lines), yet our understanding of what is actually going on is limited. It is difficult to exploit this effect practically, but nonetheless, the effect is still interesting. Smith concluded his talk by suggesting that it might be interesting to find other exemplary pairs of noisy quantum channels that can superactivate each other.

John Smolin gave the last talk on additivity issues in quantum Shannon theory (joint work with Graeme Smith), this time concerning additivity of the privacy capacity of a noisy quantum channel. The privacy capacity of a noisy quantum channel is the rate at which it can reliably transmit classical information while keeping the transmission confidential. John and Graeme followed up on the Smith-Yard result by seeking a similar superactivation result for the privacy capacity (he claimed in a Shakespeare allusion that he felt they were "walking down the primrose path"), but what they found is more interesting. They showed that there are channels with joint quantum capacity that is far larger than their individual private capacities, or one of the channels in the pair exhibits a strong violation of additivity of its classical capacity. This result is interesting because the previous results of Hastings and Smith-Yard show only a minor violation of additivity.

The second day of the workshop featured only four talks, because the organizers decided to free us for the afternoon to explore Santa Fe. I focus on the talk of Jean-Pierre Tillich. He presented a construction of quantum tornado codes that exploit some of the ideas from the theory of classical tornado codes. The classical codes can attain the Shannon capacity for the erasure channel (a channel that transmits information perfectly with some probability and flags a bad transmission with an erasure symbol with the complementary probability). Jean-Pierre presented some of the details of the iterative decoding of quantum tornado codes and claimed that his quantum tornado construction can attain the capacity of the quantum erasure channel. He also claimed that this construction resolves some of the problems with quantum turbo codes and quantum low-density parity-check (LDPC) codes.

For the afternoon, I decided to go on a hike in the mountains near St. John's College in Santa Fe with some other workshop attendees. Little did I know, I was embarking on a seven-mile hike in the snow. Ice covered many of the walking trails, making for a slippery adventure through the mountains. I slipped a few times but was able to catch myself after each slip. The trek was worth it – we had a breathtaking view of Santa Fe when we reached the top of the mountains. The timing of the hike was perfect because the sun was setting by the time we reached the end of the trail.

The first talk on Wednesday morning was perhaps the most fascinating of the day to me. Andrew Childs spoke about his "widget" formalism for realizing universal quantum computation with a quantum walk. He explained in detail how the widgets for a controlled-NOT (CNOT) gate, a pi/8 gate, and a Hadamard gate work in his formalism.

Continued on next page

The most delightful part of his talk was a multicolor animation that displayed a computation in action. His contribution may have potential applications in the future design of quantum algorithms, in quantum complexity theory, and in future quantum computer architectures.

The last talk I discuss is Scott Aaronson's talk on the fascinating implications of a world with closed timelike curves. Scott (in collaboration with John Watrous) showed that both classical and quantum computers with access to closed timelike curves can compute any problem in PSPACE efficiently (PSPACE is the class of problems that a computer can solve in any amount of time with polynomial storage space). Scott's presentation was entertaining, and he might have a future in stand-up comedy if the whole quantum gig does not work out (I recommend watching this video). Scott illustrated the main techniques used in the Aaronson-Watrous paper to prove the result. After his talk, there was a flurry of questions concerning his result. One questioner wondered if Deutsch's model for quantum computation in the presence of closed timelike curves might need to be modified in some way. Another questioner debated whether there could be entanglement between the chronology-respecting qubits (the normal qubits) and the qubits traveling along a closed timelike curve. Lastly, Charlie Bennett stated that not only did the Aaronson-Watrous result bother him, but what bothered him even more was a recent paper that showed how closed timelike curves enable an adversary to break quantum key distribution.

Unfortunately, I missed the Friday talks because I was heading out of town that morning. But I do have an interesting story to tell about the way from Santa Fe to Albuquerque. By some luck, I was able to share the shuttle ride back with a certain Peter Shor and others from the workshop. The driver asked where we were coming from. Peter responded that we were at a quantum computation and quantum information workshop. At that point, I mentioned to the driver that he was sitting next to the guy who almost single-handedly put the field where it is today. The driver was impressed and began asking questions. As a young scientist, I also had many questions for Peter. One thing I was reassured about is that Peter would not leave the field if a quantum computer actually were to be built some day. Another thing I learned is that Peter really started thinking about capacity of quantum channels when he began at Bell Labs. Finally, at a point near the end of the conversation, the driver asked Peter, "So, you have any publications?" Peter paused, thought, and then responded, "Well, actually, lots and lots of them."

For those who missed the workshop, an added bonus was the "live-blogging" at Dave Bacon's Quantum Pontiff blog at http://scienceblogs.com/pontiff/liveblogging/. Dave's updates were detailed, and one could see Dave furiously typing at a given moment. I apologize for my limited summary above – please go to Dave's Web site if you would like a more detailed summary of the workshop. Another bonus for those missing the workshop was that the local organizers filmed each talk and will later distribute these videos via the Web.

Mark M. Wilde *is a quantum information engineer with Science Applications International Corporation (SAIC), Inc. in the Washington, DC area. He recently completed his PhD in Electrical Engineering at the University of Southern California under the supervision of Todd Brun. The opinions expressed here are his own and do not reflect those of any other organization or individual.*

Announcements

APS policy on unit newsletters

APS encourages all of its units to provide newsletters to their members. Many of these newsletters contain only news about the unit's activities; others contain articles and opinion pieces. Today with electronic transmission, it is very easy for bloggers and others to pick up items from these newsletters and present them as the policy or opinion of APS. In order to prevent this, each paper and pdf version of the newsletter must contain a clear statement that the articles and opinion pieces are not peer refereed and represent solely the views of the authors and not necessarily the views of APS. In the case of online newsletters available in html format, each individual article or opinion piece must have this disclaimer clearly visible as part of the posting.

APS also requests that each unit that regularly includes opinion pieces in its newsletter appoint an editorial board that oversees the work of the editors. This board should have the authority to recommend the discontinuation of one or more of the newsletter editors if the editors do not abide by this policy or if the editor shows other behavior that the board finds unacceptable. The unit's executive committee will then make the final decision on this matter.

$|0\rangle$ **Teleportation between sealed containers** Perhaps one of the biggest news items of the past few months to come out of the quantum information community was the news that Chris Monroe (a GQI Executive Committee member) and his group at the University of Maryland successfully teleported a quantum state between two atoms separated by three meters with each atom being contained within a sealed container. This is the first instance in which a quantum state has been teleported between two completely unconnected enclosures. The team trapped ytterbium (Yb) ions in electromagnetic fields in two separate vacuum chambers. The ion in the first enclosure (let us call it *A,* the other being *B*) was hit by a burst of microwaves in order to put it into a state of superposition of two possible energy states. Then both ions *A* and *B* were excited by laser pulses in order to produce photons that were then directed toward a beamsplitter. Detectors were set up to only record an event if the photons indicated ions *A* and *B* were in orthogonal states. Once such an event was recorded (after possibly thousands of attempts) the ions were assumed to be in an entangled state. A measurement on *A* would then indicate the type of microwave burst to apply to *B* in order to recover the information originally encoded in the microwave burst on *A*. Monroe suggests the group's setup has the potential to form the basis of a large-scale quantum repeater for networking quantum memories over long distances. In addition, of course, the technology will likely prove useful to quantum cryptography and the future of quantum computation. The work was carried out under the auspices of the Joint Quantum Institute (JQI), a program bringing together the University of Maryland, the National Institutes of Standards and Technology (NIST), and the Laboratory for Physical Sciences (LPS).

$\langle 1|0\rangle$ **Entanglement Sudden Death (ESD)** While 'entanglement sudden death' sounds more dramatic, ESD also stands for 'early-stage entanglement.' In any case, it is the situation in which the amount of entanglement decreases over time. For the most part, the information itself was thought to disappear faster than the associated entanglement. However, Joseph Eberly (Rochester) and Ting Yu (Stevens Institute) have discovered that, under certain circumstances, it is possible for the degree of entanglement to actually disappear *faster* than the information itself. In other words, there can be a sudden end to entanglement. Of course, this can be purposefully facilitated by a simple act of measurement in many cases as we already know. What makes this unique is that it occurs through interaction with the environment. External environments were generally thought to degrade entanglement in a way that might be likened to radioactive decay. This new research suggests it is possible for environments to cause a sudden and complete loss of entanglement under the right (or wrong, depending on your perspective) set of circumstances. The research should prove useful to the study of open quantum systems, quantum cryptography, and long-distance quantum communication. $\langle 1|$

ITD

SEEKING CONTRIBUTIONS

The Quantum Times is seeking contributions from readers for all areas of the newsletter. In particular we are interested in articles, meeting summaries, and op-ed pieces. We are particularly keen to receive

- **op-ed pieces and letters** (the APS is *strongly* encouraging inclusion of such items in unit newsletters)
- **books reviews**
- **review articles**
- **articles describing individual research** that are aimed at a broad audience

The Quantum Times is published four times per year, usually in February, May, August, and November, though times can vary slightly. Submissions are accepted at any time.

All submissions must be in electronic format and may be sent to the editor at idurham@anselm.edu. Acceptable forms for electronic files (other than images) include LaTeX, Word (*not* Word '08), RTF, PDF, and plain text.

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Meet with the Editor in Pittsburgh at the annual **GQI Business Meeting, Tuesday, March 17, 5:45-6:45, Room 318, David L. Lawrence Convention Center**

March Meeting Information

SCHEDULE OF GQI-SPONSORED SESSIONS

Monday, March 16, 2009

Session A8: *Quantum Information meets Many-Particle Physics*, Room 414/415
8:00 AM – 11:00 AM

Session A17: *Focus Session: Photons and Quantum Dots*, Room 318
8:00 AM – 10:48 AM

Session B17: *Focus Session: Progress towards Scalable Quantum Information Processing*, Room 318
11:15 AM – 2:15 PM

Session D4 (with DCMP): *Spin Qubits in Quantum Dots*, Room 306/307
2:30 PM – 5:30 PM

Session D17: *Focus Session: Foundations of Quantum Theory*, Room 318
2:30 PM – 5:30 PM

Tuesday, March 17, 2009

Session H17: *Focus Session: Semiconducting Qubit Approaches*, Room 318
8:00 AM – 11:00 AM

Session J15: *Quantum Entanglement*, Room 316
11:15 AM – 2:15 AM

Session J17: *Focus Session: Superconducting Phase Qubits*, Room 318
11:15 AM – 2:15 AM

Session L17: *Superconducting Flux Qubits and Qubit Amplifiers and Readouts*, Room 318
2:30 PM – 5:30 PM

GQI Business Meeting, Room 318
5:45 PM – 6:45 PM

Wednesday, March 18, 2009

Session P17: *Semiconducting Qubits I*, Room 318 8:00 AM – 11:00 AM

Session T17: *Focus Session: Materials in Superconducting Qubits*, Room 318
2:30 PM – 5:30 PM

Thursday, March 19, 2009

Session V17: *Superconducting Transmons and Circuit QED*, Room 318

Session W2 (with DCMP): *Progress in Understanding the Nature of the 5/2 Fractional Quantum Hall State*, Spirit of Pittsburgh Ballroom BC
11:15 AM – 2:15 PM

Session W6: *Progress on Quantum Optics with Circuit Quantum Electrodynamics*, Room 406
11:15 AM – 2:15 PM

Session W17: *Quantum Algorithms, Simulation, and Error Correction*, Room 318
11:15 – 2:15 PM

Session X17: *Semiconducting Qubits II*, Room 318
2:30 PM – 5:30 PM

Friday, March 20, 2009

Session Y17: *Focus Session: Quantum Metrology and Nanomechanics*, Room 318
8:00 AM – 11:100 AM

Session Z17: *Spin Qubit Coherence and Control*, Room 318
11:15 AM – 12:51 PM

NOMINATIONS FOR BEST STUDENT PAPER

Once again, GQI will award two "Best Student Paper" prizes at the APS March Meeting (2009): one for theory and one for experiment. The awards, each consisting of a $500 cash prize, are sponsored by Perimeter Institute for Theoretical Physics in Waterloo, Canada, and the Institute for Quantum Computing at the University of Waterloo, respectively. All undergraduate and graduate students who are both first author and presenters of an oral or poster presentation are eligible.

To be registered for the competition, a brief nomination letter from the student's supervisor stating that the results described in the presentation are substantially the student's own work and that the student is currently enrolled at a degree-granting institute, must be sent via email to David DiVincenzo at divince@watson.ibm.com **before** the March meeting commences.

The two equally weighted criteria for the award are quality of scientific results and quality of the presentation. Judging will be undertaken by an ad hoc committee consisting of senior members of GQI.

Conferences, Workshops, & Schools

ANNOUNCEMENT/FIRST CALL FOR PAPERS

The third **Conference on Quantum Information and Quantum Control** (CQIQC- III) will take place at the Fields Institute in Toronto, August 24-27 2009. This is the follow-on to the two highly successful conferences on this topic held in Toronto in 2004 and 2006.

This year the conference will feature the award of the First J. S. Bell Prize for Research in Fundamental Issues in Quantum Mechanics and their Applications.

Details of the conference, including schedule, invited speakers (when confirmed) and submission form for abstracts of contributed papers can be found at http://www.fields.utoronto.ca/programs/scientific/09-10/CQIQCIII/. The organizing committee looks forward to receiving abstracts for contributed talks. A total of 25 such papers will be selected from these submissions

CQIQC Organizing Committee:
Daniel James, Paul Brumer, Hoi-Kwong Lo, Harry Ruda, Aephraim Steinberg

IMA CONFERENCE ON QUANTUM COMPUTING AND COMPLEXITY OF QUANTUM SIMULATION

WEBSITE: http://www.ima.org.uk/Conferences/quantum_computing.html

DATES: 31 March - 2 April 2009. VENUE: IMS Imperial College, London UK.
SUPPORTED BY: EPSRC QIP IRC and EC Network QAP.

ORGANISING COMMITTEE
Richard Jozsa (University of Bristol) (Chair)
Anthony Sudbery (University of York)
Martin Plenio (Imperial College)
Vlatko Vedral (University of Leeds).

INVITED SPEAKERS
Marcus Cramer (Imperial College)
Miguel Angel Martin-Delgado (Madrid)
Pawel Wocjan (University of Central Florida)
Daniel Gottesman (Perimeter Institute, Canada)
Tobias Osborne (Royal Holloway, London)

REGISTRATION
Non Member: **£185.00** IMA Member: **£150.00** Student: **£80.00**
Support is available for postgraduate students and researchers within 5 years of gaining their PhD.
Registration is now open at http://online.ima.org.uk/

ACCOMMODATION
Imperial College is unable to provide student accommodation for delegates. However, we have secured a number of rooms at three nearby hotels. Please phone Reservations on 020 7594 9533 to book your accommodation for the nights 31st March and 1st April 2009, quoting the name of the conference.

Please note: special rates are valid only until 5 March 2009. For further details on the hotels go to http://www3.imperial.ac.uk/conferenceandevents/accommodation/hotelaccommodation

11th International Conference on Squeezed States and Uncertainty Relations

4th Feynman festival

June 22-26, 2009
Olomouc, Czech Republic

11th International Conference on Squeezed States and Uncertainty Relations

www.icssur09.upol.cz

Main topics:
- coherent states and squeezed states, phase-space methods
- continuous variables and quantum-information processing with continuous variables
- photon pairs, their sources, properties, and applications
- photon-number-resolving detectors, homodyne detection and other detection techniques
- atom and molecular optics with emphasize to non-classical behavior
- cavity QED
- Bose-Einstein condensates
- quantum propagation
- photonic fibers and their nonlinear behavior
- quantum computing, quantum memories
- entanglement and decoherence
- quantum cryptography

Confirmed invited speakers:
Alessandra Andreoni
Konrad Banaszek
Robert Boyd
Marco Genovese
Boris Hage
Gerd Leuchs
Luigi Lugiato
Hideaki Matsueda
Eugene Polzik
Gerhard Rempe
Malvin Carl Teich
Juan P. Torres
Werner Vogel
Ian Walmsley
Anton Zeilinger

4th Feynman festival

www.feynman09.upol.cz

Main topics:
- quantum information theory
- quantum computing
- solid state quantum information processing
- foundations of quantum theory
- quantum entanglement and its applications
- quantum cryptography

Confirmed invited speakers:
Antonio Acin
Nicolas Cerf
Jens Eisert
Nicolas Gisin
Peter Knight
Renato Renner
Alexander Retzker
Valerio Scarani
Harald Weinfurter
Michael Wolf
Mario Ziman

Both conferences will be held at Palacký University in Olomouc, Czech Republic, in a beautiful historic building Konvikt. Deadline for registration as well as deadline for regular registration fee is **March 15, 2009**. Registration can be done through conference web pages. One page abstracts in plain text including author names, affiliations, and possibly list of references are welcome before March 15, 2009. Conference proceedings will be published on CD ROM and web. Contributions should be sent as a camera-ready pdf file to the conference e-mail addresses icssur2009@jointlab.upol.cz or feynman2009@jointlab.upol.cz before June 30, 2009.

Positions

TENURE-TRACK POSITION (Designated Associate Professor)
at IAR NAGOYA UNIVERSITY

QUANTUM INFORMATION, QUANTUM MEASUREMENT,
AND QUANTUM FOUNDATIONS

The Institute for Advanced Research (IAR) of Nagoya University is inviting applications from young researchers from all over the world for a tenure-track position in the field of Quantum Information, Quantum Measurement, and Quantum Foundations at an associate professor level.

Candidates should hold a PhD degree, granted within the past 10 years (as of April 1, 2009). There are no restrictions on candidates' nationalities. The appointment is to start at the earliest possible time after the notification of the selection decisions until March 31, 2014 (employment contracts will be renewed annually during the period of appointment). A mid-term evaluation will be conducted during financial year 2012, the results of which will determine whether the appointees can continue in the tenure-track positions. A final evaluation will be conducted at the end of the term, the results of which will determine whether the appointees will be granted a tenured position at the graduate school of information science. The appointee may be expected to teach and advise students in their areas of expertise at the graduate school of information science. **The deadline for applications is March 10, 2009.** All candidates will be screened and selected by the IAR Tenure-Track Positions Selection Committee. Notification of the selection decision will be at the earliest possible time after April 1, 2009

Application materials must include (1) a CV, (2) a one-page summary of previous research contributions, (3) a one-page plan for future work, (4) a complete list of previous academic works (books and refereed articles that have already been published), (5) reprints of key works (up to three), and (6) names and contact information of 8 persons (not to exceed 4 persons of Japanese nationality) from whom references can be obtained.

All application materials should be in English and submitted application materials will not be returned to the candidates. It is strongly recommended that candidates should apply via the online application system: http://www.iar.nagoya-u.ac.jp/SRPR/index.html.

Candidates may also mail the application materials to the following address:

The Secretariat, Program for the Special Rearing Plan for Researchers,
Institute for Advanced Research, Nagoya University, Furo-cho, Chikusa-ku,
Nagoya, 464-8601, JAPAN

Contact information concerning the graduate schools/other organizations can be found at the online application system.

Inquiries are handled by email only. Email Address:
SRPR_inquiry@iar.nagoya-u.ac.jp.

Nagoya University is an Equal Opportunity Employer.

NB: For further information about the Regulation on Pay Schedules for Employees Receiving Annual Salary at Nagoya University, please contact the Secretariat by e-mail at SRPR_inquiry@iar.nagoya-u.ac.jp.

UNIVERSITY of GUELPH

DEPARTMENT OF MATHEMATICS & STATISTICS

QUANTUM INFORMATION

The Department of Mathematics and Statistics at the University of Guelph invites applications for a full-time tenure track position to start 1 July 2009 or thereafter, at the rank of Assistant Professor. The successful candidate will have the opportunity to become a member of the **Canadian Institute for Advanced Research** program in *Quantum Information Processing*. Guelph is centrally located in southern Ontario, and the candidate will have the opportunity to participate in activities at the nearby Institute for Quantum Computing and Perimeter Institute for Theoretical Physics in Waterloo, and the Fields Institute for Mathematical Sciences in Toronto. Minimum qualifications are a Ph.D. in a relevant discipline, outstanding promise in research, and evidence of strong teaching potential. The successful candidate will be expected to actively participate in our graduate programs emphasizing applied mathematics and statistics. Salary will be commensurate with qualifications and experience. A review of applications will begin April 3, 2009 and continue until the position is filled. Candidates should submit curriculum vitae, research statement and teaching statement and arrange for three letters of reference to be sent directly to

Professor David W. Kribs
QIS Appointments Committee
Department of Mathematics and Statistics
University of Guelph
Guelph, Ontario N1G 2W1.
Fax (519)837-0221.
E-mail: qispos@uoguelph.ca

All qualified candidates are encouraged to apply. Canadians and permanent residents will be given priority. The University of Guelph is committed to an employment equity program that includes special measures to achieve diversity among its faculty and staff. We therefore particularly encourage applications from qualified aboriginal Canadians, persons with disabilities, members of visible minorities, and women. The position is subject to final budgetary confirmation.

Topical Group on Quantum Information

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THE LIGHTER SIDE

IN HONOR OF PAUL HARVEY

The world of radio was recently saddened by the death of Paul Harvey at the age of 90, perhaps best known for his *The Rest of the Story* segments. In honor of Harvey's 75 years in radio, here is an anecdote supposedly attributed to him. While we do not know for certain whether or not he actually came up with this, sometimes a little mystery is a good thing.

Albert Einstein was just about finished with his work on the theory of special relativity, when he decided to take a break and go on vacation to Mexico. So he hopped on a plane and headed to Acapulco. Each day, late in the afternoon, sporting dark sunglasses, he walked in the white Mexican sand and breathed in the fresh Pacific sea air. On the last day, he paused during his stroll to sit down on a bench and watch the Sun set. When the large orange ball was just disappearing, a last beam of light seemed to radiate toward him. The event brought him back to thinking about his physics work. "What symbol should I use for the speed of light?" he asked himself. The problem was that nearly every Greek letter had been taken for some other purpose. Just then, a beautiful Mexican woman passed by. Albert Einstein just had to say something to her. Almost out of desperation, he asked as he lowered his dark sunglasses, "Do you not zink zat zee speed of light is very fast?" The woman smiled at Einstein (which, by the way, made his heart sink) and replied, "Si."
And now you know the rest of the story.

Paul Harvey
September 4, 1918 – February 28, 2009