

**Quantum Communication, Measurement and Computing (QCMC)  
Charter for a Series of Biannual International Conferences**

**First Edition, January 2007  
Second Edition, August 2009**

Preamble

The International Conference on Quantum Communication, Measurement and Computing (QCMC) was established to encourage and bring together scientists and engineers working in the interdisciplinary field of quantum information science and technology. To date, nine such meetings have been held and the tenth has been scheduled:

Quantum Aspects of Optical Communication, Paris, France, 1990

Quantum Communication and Measurement, Nottingham, United Kingdom, 1994

Quantum Communication and Measurement, Fuji-Hakone, Japan, 1996

Quantum Communication, Measurement and Computing, Evanston, Illinois, USA, 1998

Quantum Communication, Measurement and Computing, Capri, Italy, 2000

Quantum Communication, Measurement and Computing, Cambridge, Massachusetts, USA 2002

Quantum Communication, Measurement and Computing, Glasgow, United Kingdom, 2004

Quantum Communication, Measurement and Computing, Tsukuba, Japan, 2006

Quantum Communication, Measurement and Computing, Calgary, Canada, 2008

Quantum Communication, Measurement and Computing, Brisbane, Australia, 2010.

Commencing with the Fuji-Hakone meeting, the International Quantum Communication Award has been presented at each QCMC. The award winners have been as follows:

1996 — Charles Bennett, Carl Helstrom, Alexander Holevo, Horace Yuen

1998 — Jeffrey Kimble, Peter Shor

2000 — Paul Benioff, Christopher Monroe, David Wineland

2002 — David Deutsch, Serge Haroche, Benjamin Schumacher

2004 — Richard Jozsa, Prem Kumar

2006 — Ignacio Cirac, Phillipe Grangier, William Wootters, Peter Zoller

2008 — Akira Furusawa, Jeffrey Shapiro, Anton Zeilinger

All of these meetings have been supported, at least in part, by Tamagawa University, which has also sponsored all of the awards. This has been accomplished through the dedicated leadership of Prof. Osamu Hirota of Tamagawa University, with the active encouragement of Tamagawa's President Yoshiaki Obara. In order to ensure its long-term stability, however, Professors Hirota, Kumar (Principal Organizer, QCMC1998), and Shapiro (Principal Organizer QCMC2002) prepared a charter in January 2007 that established a Steering Committee for the QCMC series and formalized the process by which future conferences would be organized. QCMC2008 was organized and QCMC2010 was scheduled following the dictates of this charter. In August 2009, a second, updated edition of the QCMC Charter was prepared by Professors Shapiro (Steering Committee Chair), Hirota (Steering Committee Past Chair), and Kumar (Steering Committee Vice-Chair).

### Purposes

The purposes of the January 2007 charter were to establish a QCMC Steering Committee as the governing body for the continuation of the conference series, and to provide an organization and policy framework to which future conferences should adhere. In keeping with the provisions of that charter, an updated version was prepared in August 2009, based on the experiences and recommendations stemming from QCMC2008. The sections to follow specify:

- The structure and responsibilities of the Steering Committee
- The structure and responsibilities of the Organizing and Program Committees for each QCMC
- The structure and responsibilities of the Award Committee for each QCMC
- The structure and style of each QCMC
- The Steering Committee's initial membership, its membership rules, and the membership for 2008-2010

### Steering Committee

The Steering Committee will consist of a Past Chair, a Chair, and a Vice-Chair, plus up to seven additional members. In January 2007, however, the Steering Committee began with two Co-Chairs and a Vice-Chair, rather than a Past Chair, a Chair, and a Vice-Chair. Until the end of QCMC2008, the Co-Chairs were Osamu Hirota and Jeffrey Shapiro and the Vice-Chair was Prem Kumar. After that, and until the end of QCMC2010, Osamu Hirota became Past Chair, Jeffrey Shapiro became Chair, and Prem Kumar remained as Vice-Chair. The other initial members were chosen to ensure good coverage of both the key disciplines contributing to quantum information science and technology and the geographical regions in which this field is under vigorous development.

The recurring responsibilities of the Steering Committee are as follows:

- To solicit proposals from potential Principal Organizers who want to host QCMC. This will be done at least four months in advance of an upcoming conference, and will be based on the continuing practice of alternating locations between different geographical regions worldwide.
- To choose the Principal Organizer and venue for next QCMC based on the proposals that have been received. This decision will be made at the Steering Committee meeting during the current QCMC.
- To consider modifications to the scope of QCMC.
- To consider modifications to the QCMC organization and policy framework.
- To ratify the recommendations of the Principal Organizer for invited speakers.
- To call for nominations for the Quantum Communication Awards.

Professors Hirota, Shapiro and Kumar appointed the initial membership of the Steering Committee by March 2007. The Steering Committee selected the Principal Organizer and venue for QCMC2008 by May 2007. Starting in 2008, the Steering Committee will meet at each QCMC to decide on the Principal Organizer and venue for the next QCMC, and to make changes to the Steering Committee membership. The new Principal Organizer — if not already a member of the Steering Committee — will be appointed to that committee for a four-year term, to ensure continuity in conference planning.

### Organizing and Program Committees

Every QCMC will be led by a Principal Organizer, who will appoint an Organizing Committee and a Program Committee for the conference. The Organizing and Program Committees will have the following structure and responsibilities:

- One of the Steering Committee Co-Chairs will be an ex-officio member of the Organizing Committee for QCMC2008. Thereafter, the Steering Committee Chair will be an ex-officio member of the QCMC Organizing Committee for the conference occurring during their term of office.
- The other members of the Organizing Committee will be quantum information researchers chosen to provide the local expertise needed to make all arrangements for the conference.
- The Organizing Committee will raise the necessary funds to cover those conference expenses that cannot be covered from seed funding (see below) and conference registrations.
- The Organizing Committee will recommend invited speakers for the conference to the Principal Organizer, who will compile a final list and submit to the Steering Committee for ratification.
- The Organizing Committee — or a Program Committee appointed by the Principal Organizer — will review and select contributed papers for oral or poster presentation.
- The Organizing Committee will arrange for the conference venue, room blocks at hotels, an afternoon or evening outing for the conferees, and the conference banquet.
- The Organizing Committee — or a Publications Committee appointed by the Principal Organizer — will arrange for and oversee the publication of the QCMC Proceedings.
- The Organizing Committee will call for nominations for the Quantum Communication Award.
- The Organizing Committee will supply the Principal Organizer of the subsequent QCMC with its email list of attendees.
- The Program Committee will be chosen to provide breadth of intellectual and geographical coverage for quantum information science and technology research.

- The Program Committee will recommend invited speakers for the conference to the Organizing Committee.
- The Program Committee will review and score the submissions that are received in response to the call for papers.
- The Program Committee will assist the Organizing Committee in sessioning the conference.

Seed funding for QCMC2008 was provided and seed funding for QCMC2010 will be provided by Tamagawa University (1M¥ per conference) and the Research Laboratory of Electronics at MIT (\$10K per conference). The Quantum Communication Awards presented at QCMC2008 and those to be presented QCMC2010 will be funded (1M¥ per conference) by Tamagawa University.

#### Award Committee

Nominations for the Quantum Communication Awards to be presented at each QCMC will be submitted to the Award Committee for that conference. These nominations, in addition to those from the Steering Committee and the Organizing Committee, may come from anyone in the quantum information science and technology community. For QCMC2008 and QCMC2010, the Award Committee will be chaired by Osamu Hirota, who will appoint the other members. The Award Committees for QCMC2008 and QCMC2010 will recommend winners in the theory and experiment categories for approval by the President of Tamagawa University. Plans for sponsorship of the Quantum Communication Awards after QCMC2010 will be the responsibility of the Steering Committee.

#### QCMC Structure and Style

The QCMC conferences will adhere to the following structure and style, subject to future changes instituted by the Steering Committee.

- Each conference should be 4 to 6 days in duration.
- Each conference should feature a program of invited talks by world leaders from across the various subfields of quantum information science and technology.
- The Quantum Communication Award winners must be invited to present talks and receive their awards.

- Each conference should include as many high-quality contributed talks as can be fit within the program schedule.
- Each conference should include one or more poster sessions.
- All contributed papers — whether for oral or poster presentation — must be subjected to review prior to acceptance.
- The entire conference should be in single-session format, i.e., no parallel sessions, except, possibly, for at most one afternoon of dual sessions to accommodate exceptionally high caliber contributed papers that could not otherwise fit into the program.
- An afternoon or evening outing for the conferees (and their guests) should be part of the conference.
- There must be a conference banquet, at which the Quantum Communication Awards are presented and the next Principal Organizer is introduced.
- There must be a published Proceedings, which (ideally) should include all papers presented at the conference.
- The conference registration fee should be kept as low as possible, to enable the broadest spectrum of attendance.

#### Initial Steering Committee Membership and Membership Rules

The following is the initial membership for the Steering Committee.

Co-Chairs — Osamu Hirota (2006-2008), Jeffrey Shapiro (2006-2008)

Past Chair — Osamu Hirota (2008-2010)

Chair — Jeffrey Shapiro (2008-2010)

Vice-Chair — Prem Kumar (2006-2010)†

Australia — Gerard Milburn (2006-2010)

Canada — Raymond Laflamme (2006-2010)

Europe — Philippe Grangier (2006-2010)

Europe — Mauro D'Ariano (2006-2010)

Japan — Masahide Sasaki (2006-2010)

†In accord with the membership rules listed below, Professor Shapiro will be Past Chair for 2010-2012, Professor Kumar will be Chair for 2010-2012 and Past Chair for 2012-2014.

Because QCMC has been undergoing a significant transition, with the creation of its Steering Committee, all initial terms were for four years of service. However, after the QCMC2008 meeting of the Steering Committee, some terms were extended to six years while some will end after QCMC2010. To ensure both continuity and renewal of leadership, after the initial startup transient, Steering Committee terms will be subject to the following rules.

- At each QCMC, starting in 2010, the Steering Committee will elect a new Vice-Chair, who will serve two years in that role, followed by two years as Chair and two years as Past Chair, and then retire from the Steering Committee.
- New appointments to the Steering Committee made at or after QCMC2008 will be for four-year terms. These appointments will be made by the incoming Past Chair, Chair, and Vice-Chair. One of the new appointments must be the Principal Organizer of the next QCMC, unless that person is already a member of the Steering Committee.
- No one can serve more than eight years (two terms = four conferences) on the Steering Committee, unless they are elected Vice-Chair after two years of service on the Steering Committee, in which case they may serve ten years (five conferences) as they progress from Vice-Chair to Chair to Past Chair.

#### Steering Committee Membership 2008-2010

Chair — Jeffrey Shapiro (2008-2010 term)

Past-Chair — Osamu Hirota (2008-2010 term)

Vice-Chair — Prem Kumar (2008-2010 term)

Australia — Ping Koy Lam (2008-2012 term)

Australia — Gerard Milburn (2008-2010 term)

Canada — Raymond Laflamme (2008-2010 term)

Canada — Alexander Lvovsky (2008-2012 term)

Europe — Philippe Grangier (2008-2012 term)

Europe — Mauro D'Ariano (2008-2010 term)

Japan — Masahide Sasaki (2008-2012 term)

Plans for continuing the Quantum Communication Awards after QCMC2010 will be made at the Steering Committee's QCMC2010 meeting.