Join Radboud Summer School 2017!

Quantum in the Summer

change perspective

Radboud Universiteit
One of today’s most fascinating fields of research and innovation involves applying quantum phenomena to new technology. Quantum technologies is an area in which EU has recently committed more than €250 million. Research in quantum technologies has opened a new path to 100% secure communication. Indeed, quantum technologies promise to revolutionise society this century through secure communication, precision measurement, and powerful computation.

The purpose of this summer course is to partake in this revolution by encouraging the next generation of researchers into quantum-based research. The aim of the course is to bring you up to date with the cutting edge of research in some aspects of quantum information and computation and to make it easier to get to that cutting edge in other aspects of the field.

The course will consist of a relatively small number of lecturers. We will offer a coherent, unified, in-depth set of lectures and tutorials. Our focus will be on fundamental theory supplemented by illustrative examples of quantum mechanics in action. We hope to stimulate future work and inspire the next-generation of research by grounding the audience with such a basis.

**We will introduce**
- The basics of quantum mechanics via well-worked examples
- Fundamental protocols of quantum information science
- The widely used model of quantum computation, the so-called quantum circuits model of computation.
- Insights into the 'spooky' nature of quantum entanglement and explanation of why “entanglement is a physical resource”
- Properties of quantum communication channels and their application

**After this course you are able to:**
- Understand fundamental aspects of quantum mechanics
- Understand the concept of entanglement and its importance as a physical resource
- Describe quantum communication channels and be able to define concepts, such as, channel capacity
- Describe the workings of foundational quantum protocols, such as, super dense coding and quantum teleportation.
For whom is this course designed
Quantum information and computation is one of the fields that benefits most from the creative interaction of mathematicians, physicists, computer scientists, and others.

Admission requirements
We stress that no prior experience of quantum theory will be assumed. We only ask that you have an experience of elementary linear algebra and mathematical maturity of a third or fourth year undergraduate.

Number of EC
2 ECTS

Entry level
Advanced Bachelor, Master and PhD students.

Course leader
Dr. Colin Wilmott, Senior Lecturer
Mathematics, Nottingham Trent University

Dates
Monday 7 August – Friday 11 August 2017

Course fee
€525

Discounts
• 10% discount for early bird applicants. The early bird deadline is 1 April 2017.
• 15% discount for students and PhD candidates from partner universities.
Want to be part of the RSS experience?

More than just a course!
Radboud Summer School is more than an academic event. It is a unique opportunity to meet other international students and researchers and to get to know Radboud University and the city of Nijmegen. Our participants come from all over the world and have different cultural and academic backgrounds. Our programme includes the following activities free of charge: welcome reception, sports activity, guest lecture and farewell drink. We offer also a BBQ, River Cruise, City Tour, Pub quiz and excursion for a small fee.

Have a look at what participants had to say about their experience!

And do not forget to register now!

Deadline application
June 1, 2017

Contact
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www.ru.nl/radboudsummerschool, August 6-18 2017