

# ジュネーブ大学と id Quantique社による 初めての量子乱数ウェブダウンロードサービス開始！

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## ***True randomness upon request – [www.randomnumbers.info](http://www.randomnumbers.info)***

**The University of Geneva and the company id Quantique team to launch the first web site offering the possibility to download random numbers from quantum origin.**

Geneva, March 18, 2004 – The number of applications requiring random numbers increases continuously. They are used for example in cryptographic applications to guarantee the secrecy of electronic communications, in scientific calculations or in chance games and lotteries. In spite of this, their generation remains a difficult task. The Group of Applied Physics and the Computer Science Department of the University of Geneva team with the company id Quantique to launch the first website allowing to download random numbers from quantum origin and to make true random numbers widely available.

The website – conveniently located under the web address [www.randomnumbers.info](http://www.randomnumbers.info) - offers the possibility to request a sequence of random numbers. The length and the bounds of the sequence can be specified by the user. A quantum random number generator connected to the server is used to produce the numbers on demand. This website will evolve and expand in the future to become the reference resource on randomness and random numbers on the internet.

According to Nicolas Gisin, professor at the Group of Applied Physics, “Quantum physics is the only physical theory predicting that the outcome of certain phenomena is random. It is thus a natural choice to use it to generate true random numbers.” The Group of Applied Physics developed in 1998 the first practical quantum random number generator. This device exploited an elementary quantum optical process – namely the reflection or the transmission of a light particle on a semi-transparent mirror – to produce binary random numbers.

This quantum random number generator was commercialized by the company id Quantique, a spin-off of the University of Geneva. “The Quantum Random Number Generator met a great commercial success. This is why we have decided to develop a second generation, which will introduce at the Cebit 2004 trade show in Hannover” said Gregoire Ribordy, CEO of id Quantique.

The Computer Science department has developed a server/client application for scientist from around the world to be able to download random numbers directly in the C, C+, Fortran or Java codes used for their simulations. “The first prototype is in function. Depending on the reaction of the scientific community, future developments such as the creation of a network of servers are under consideration” said Stefan Marconi, project leader at the Computer Science department.

The automatic generation of random numbers in scientific applications has always been a serious subject of discussion since a machine cannot produce such numbers without the use of a rule. The pseudorandom numbers are thus completely deterministic and can sometimes introduce unwanted bias in the phenomena under study. “I remember distinguished colleagues of mine having to withdraw a publication from a journal because they realized the physical effect they had discovered was in fact due to the pseudorandom generator” said Bastien Chopard, professor at the Group of Scientific and Parallel Computing.

From a practical point of view, the website and the server will be hosted by the IT Division of the University of Geneva and will be jointly maintained by the partners. "I am glad to host and to provide this new service to the community. It is a perfect example of how the IT Division can provide expertise for production and offer a real scale test bed for projects developed by research teams" said Alain Jacot-Descombes, Head of the IT Division.



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## About University of Geneva



UNIVERSITÉ DE GENÈVE



The Computer Science department is divided into six groups involved in research as diversified as numerical imagery, high performance computing and parallelism, theoretical computing, software engineering, bio-informatics and artificial intelligence.

At present time, the Computer Science department staff consists of 65 people (lecturers, researchers, technical personnel) and the various teaching it proposes reaches about 350 students.

The Group of Applied Physics consists of three sections, active in the fields of optics, superconductivity and biomedical physics. It has a staff of about 50 people. It has won international recognition for the quality of its research.

## About id Quantique



id Quantique is a spin-off of the University of Geneva, Switzerland. It was created in October 2001 by four researchers of the Group of Applied Physics, Grégoire Ribordy, Olivier Guinnard, Nicolas Gisin and Hugo Zbinden.

id Quantique has the commitment to become a leader in novel secure communication systems based on quantum photonics. It has developed the first commercial quantum cryptography system and quantum random number generator. The products of id Quantique target the market of high security cryptographic applications and have the potential to dramatically enhance the security of digital communications, by solving the key generation and exchange problems. In December 2003, id Quantique raised 1 million Euros from the Luxemburg based i2i venture capital fund. The company has been supported since its creation by CCSO, a Swiss coaching network, and the CTI-Startup initiative.

In November 2001, id Quantique was one of the recipients of the European Innovation Awards from the Wall Street Journal Europe. It was also selected to represent Switzerland at the 2002 and 2004 Cebit in Hannover, Germany.



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