



The BIG Bell Test

A set of worldwide quantum physics experiments powered by human randomness.

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Would you like to know how your human unpredictability can help advance science? This is your chance! On November 30th 2016, you'll have the opportunity to participate in a unique worldwide project that will use human randomness to power experiments that test the laws of quantum physics.

Coordinated by ICFO, the BIG Bell Test is a worldwide project that intends to carry out a set of simultaneous quantum physics experiments in different labs around the world on November 30th. The experiments need the participation of a large number of people, who will contribute to the initiative by behaving as randomly as possible.

This initiative was born from ICFO's contributions to the loophole-free Bell tests of 2015, which required an extraordinary attention to the nature of randomness and its role in physics experiments. ICFO contributed to these experiments by using a physical random number generator that produced very fast, very pure random numbers. Those experiments inspired the idea of a large-scale human-driven experiment using internet technologies.

On November 30th, there will be nine experiments running, carried out by nine scientific partners: CQC2T -- Griffith University and EQuS -- University of Queensland (Brisbane-Australia), CEFOP/Department of Electrical Engineering of the Universidad de Concepcion (Concepcion-Chile), which node includes the Department of Electrical Engineering - Linkoping University, the University of Sevilla and the Dipartimento di Fisica-Sapienza Universita di Roma, CAS --University of Science and Technology of China (Hefei-China), ICFO (Barcelona), IQOQI/OEAW (Vienna-Austria), LMU-Ludwig-Maximilian University (Munich), LPMC -- Universite Nice/CNRS (Nice-France), QUDEV- ETH Zurich (Zurich). The experiments will test, among many other things, the properties of entangled particles.

In order to consider it a success, the project needs the contribution of at least 30.000 people, on November 30th. On that day participants around the world will be asked to contribute through a video game, tailored specifically for this project that can be found on the www.thebigbelltest.org website (The BIG Bell Quest). Everyone who joins the initiative will be challenged to create a sequence of 0s and 1s as unpredictable or random as possible. These bits will be sent live to the quantum physics experiments, where they will determine the "questions asked" (i.e., the measurements made) of quantum objects including atoms, photons, and superconductors.

The BIG Bell Test's ultimate goal is to show for the first time that human choices can contribute to fundamental science, and at the same time, to perform a suite of never-before-attempted experiments. We invite you to contribute to science by joining the Bellster Community and showing us how unpredictable you are with video game. Start practicing now for Nov. 30th, the BIG day.