The CCCB's latest exhibition brings quantum physics to all audiences

Quantum offers keys to understanding the principles of this discipline by means of the joint creative work of scientists and artists

Press conference: Tuesday, 9 April, at 11:00
Opening: Tuesday, 9 April, at 19:00

Barcelona, 27 March 2019. *Quantum* is an international project curated by **Mónica Bello** and **José-Carlos Mariátegui**, with the collaboration as advisor of physicist **José Ignacio Latorre**. The exhibition brings together two intertwined itineraries in a single hybrid space to describe one of the foremost paradigms of the last century: quantum physics.

First, ten artistic projects show how the impact of quantum physics goes beyond the realm of science. Then, nine windows introduce laboratory research work and present visitors with the intellectual achievement represented by the theories of physics in contact with the scope of advanced experiments.

The union of these two itineraries, the artistic and the scientific, creates a multifaceted scenario that raises new questions and connections, helping us to comprehend an apparently invisible reality and the impact it has on our lives.

Quantum physics

Quantum physics emerged from the scientific advances of the last one hundred years. This field of science describes the fundamental laws of the world that remain hidden from the senses.

Quantum physics is the human theory that most accurately describes nature today. In many respects, it is a surprising theory, subject to criticism and of great philosophical scope.

Quantum physics directly and indirectly touches on countless theories and models that accurately describe nature and explore its limits.

Everyday life is surrounded and conditioned by the domain of the quantum world, without us really realising. It allows us to create sensors, atomic clocks, magnetic resonance machines, computers and lasers.

Its future is no less impressive; quantum physics is gradually becoming advanced quantum engineering. Subtler, more refined, more surprising machines will be created. Humankind's economy is and will continue to be closely linked to the exploitation of the quantum principles that are being investigated at all possible scales.

An international project

Quantum began at Collide International, the flagship programme of Arts at CERN in collaboration with FACT Liverpool. For the last three years, a group of artists was invited to reside at CERN (European Organisation for Nuclear Research, Geneva) to advance their artistic practice by establishing a dialogue with engineers and particle physicists. The project brings together the ten works produced by this exchange.

The exhibition is coproduced by ScANNER (Science and Art Network for New Exhibitions and Research), CERN (European Organisation for Nuclear Research, Geneva), FACT (Foundation for Art and Creative Technology, Liverpool), CCCB (Centre de Cultura Contemporània de Barcelona), IMAL (Interactive Media Arts Laboratory, Brussels) and Le Lieu Unique (Nantes).

The project's first outing, with the presentation of the pieces produced by commissioning ten international artists, was presented at FACT Liverpool with the title Broken Symmetries.

The form of the exhibition at the CCCB

Starting on 10 April 2019, the CCCB presents an expanded version of the exhibition that ran in Liverpool. At the CCCB, the artistic itinerary comprising ten artworks is joined in ***Quantum*** by a scientific and philosophical itinerary with the aim of analysing how the new postulates of quantum physics are shaking our vision of the world and the future of humankind.

Artistic itinerary

Quantum looks at how the languages and methodologies of transdisciplinary artistic practice can contribute to an understanding of science. To understand the subatomic world, we have to realise that it is an area governed by different properties. These properties are represented as models and experiments that scientists try to understand and fit into a logical scenario. The ultimate aim of the exhibition is to reflect more closely on these models and experiments by means of the participation of people from the field of culture, showing the work being done at CERN, where the world's largest particle physics experiment is being carried out.

These are the artists-in-residence at CERN and the works they produced during their stay at the Nuclear Research Centre in Geneva.

1. **SEMICONDUCTOR**: *The View from Nowhere*, 2018
2. **JUAN CORTÉS**: *Supralunar*, 2018
3. **LEA PORSAGER**: *CØSMIC STRIKE*, 2018
4. **HRM199**: *one1one*, 2018
5. **YUNCHUL KIM**: *Cascade*, 2018
6. **JAMES BRIDLE**: *A State of Sin*, 2018
7. **YU-CHEN WANG**: *We Aren't Able to Prove That Just Yet, But We Know it's Out There*, 2018
8. **JULIETA ARANDA**: *Stealing One's Own Corpse (An Alternative Set of Footholds for an Ascent into the Dark)* – Part 3: *Politics without Oxygen*, 2018
9. **DIANN BAUER**: *Scalar Oscillation*, 2018
10. **SUZANNE TREISTER:** *The Holographic Universe Theory of Art History (THUTOAH),* 2018

Scientific itinerary

The scientific itinerary is an accessible route via nine windows onto the laboratory. These nine windows of knowledge prompt visitors to consider fundamental quantum principles, their philosophical consequences and their all-pervasive technological applications.

1. **Scales**: Where do we need quantum mechanics?
2. **Quantum states**: How do we describe nature?
3. **Overlap:** Can two options overlap?
4. **Intertwining:** Can two particles depend on one another?
5. **Indeterminacy:** Can we know with certainty?
6. **Randomness:** Does chance exist?
7. **Open science:** Who created quantum mechanics?
8. **Everyday quantum:** Do we know how much quantum theory there is in our lives?
9. **Change-evolution:** What can we do with a quantum computer?

Activities

Alongside the exhibition, the CCCB is organising a series of activities to submerge the public into the complexity of quantum physics from other viewpoints and in different formats:

- The CCCB is organising **two cycles of lectures** to take place between the months of April and July, with the collaboration of several internationally renowned specialists.
- The exhibition reactivates **Beta Station**, a laboratory space within the exhibition space to enable work with communities affected by the issues raised, encourage meetings, create new communities, and work with the city's agenda.
- A full **education programme** will be on offer throughout the exhibition, aimed at all students and publics.
- The CCCB's open-air film programme, ***Gandules***, will centre this year's agenda on the screening of nine films about parallel universes, time travel, splitting and abolitions of the rational order. The programme will be curated by film critic and writer Jordi Costa.

General information

Quantum

Exhibition in Gallery 2 at the CCCB

From 10 April to 24 September 2019

Curators: Mónica Bello and José-Carlos Mariátegui

With the advisory collaboration of José Ignacio Latorre

Produced by

CCCB Centre de Cultura Contemporània de Barcelona · CERN Arts@CERN Great Arts for Great Science · FACT · le lieu unique · iMAL

Collaborating

Sabadell Fundació · IFAE Institut de Física d'Altes Energies

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Press Service of the CCCB
Mònica Muñoz-Castanyer, Gerard Nomen and Aniol Estebanell
T. 93 306 41 23 | Montalegre 5, 08001 Barcelona
premsa@cccb.org | http://www.cccb.org/es/conecta/prensa