

Within the cosmophone, a novel aesthetic experience will bring you to the heart of CERN's research, between the infinitely small and the infinitely large. You will become aware of the flux of elementary particles which fill our whole galaxy. Their properties, as studied at CERN for decades, have governed the early ages of the universe and condition its future.

"I am dreaming of a sound, a primary sound of very low frequency, out of which the Universe would expand. I wish a music stretched from noise to pure waves, from silence to silence." Jacques Diennet

*The Cosmophone has been designed and built by
David Calvet, Richard Kronland, Claude Vallée and Thierry Voinier, researchers at CNRS
and
Olivier Bedu, architect, Serge Charron, acoustician,
Jacques Diennet et Pascal Gobin, composers,
Hendrick Sturm, visual artist.*

*with the technical support of the Centre de Physique des Particules de Marseille and of the
Laboratoire de Mécanique et d'Acoustique.*

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More information is available at <http://cosmophone.in2p3.fr>



For the CERN 50th anniversary
in collaboration with the
CNRS



UBRIS STUDIO presents the
Cosmophone



A multimedia installation based on
cosmic ray detection



COSMIC RAYS

The Earth is continuously bombarded by elementary particles originating from our entire galaxy which include cosmic rays. Cosmic rays interact with the earth's atmosphere producing highly penetrating particles, called muons, which reach sea level. These muons, a type of heavy electrons, can in turn produce photon and electron showers on their path to the earth's surface. Although crossed by several muons every second, the human body is insensitive to these phenomena.

PARTICLE DETECTION

Muons and electron showers are detected through the tiny amount of blue light they produce in plastic scintillator tiles. After conversion into short electrical pulses by photomultipliers, signals are collected by a fast data acquisition electronics and transferred to a numerical sound synthesis system.

SOUND IMAGING

A system of sound synthesis materialises the trajectories of muons and electron showers in three dimensions, at the place and time they occur. Sounds are produced numerically by a computer which activates loudspeakers located close to the hit detectors. A variety of 3D effects can be created, offering a rich stimulus from cosmic phenomena to the composer's imagination.

