

ION HOLE,
EVELINA DOMNITCH & DMITRY GELFAND

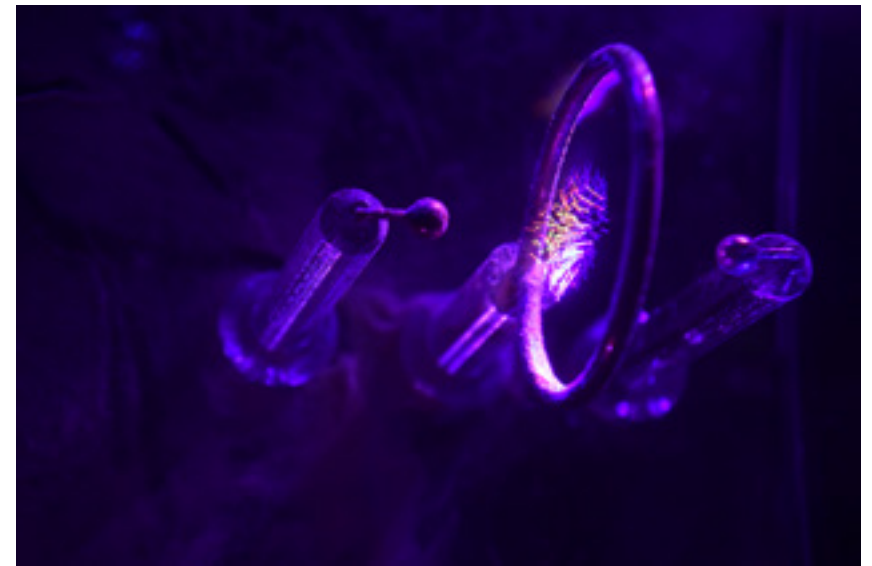
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1/ THE *ION HOLE* INSTALLATION



The circular screen showing an enlarged image of the oscillating lycopodium spores (installation at Le Lieu Unique, Nantes, 2016, image Martin Argyroglo for Le Lieu Unique)



Close up of the Paul trap with lycopodium spores (Image Dmitry Gelfand)

Ion Hole is an installation that shows to the naked eye extremely small particles that normally are not perceptible to our senses. By so doing, it echoes and reflects upon current research in quantum physics in which individual atoms are manipulated and even made visible.

At the core of the installation is a scientific device called a «Paul trap» where lycopodium spores are captured by electric fields that cause the charged spores to oscillate. Lit by a laser light they become visible to the human eye and reveal the electric field.

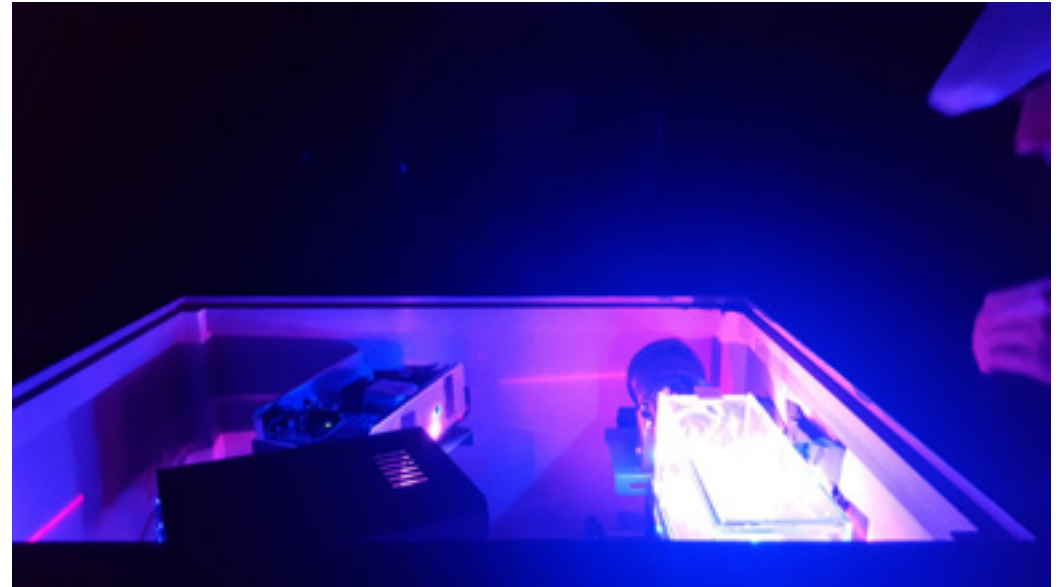
The 2-centimeter ring at the center of the trap is blown up into a meter-sized optical projection onto a circular semi-transparent screen, hence symbolically connecting matter from its microscopic to its macroscopic cosmic scale.

THE TECHNICAL SET UP : DISPOSITIF OF *ION HOLE*

The elements composing *Ion Hole* are laid in a wooden box (72 x 60 x 37 cm).

On the right of the image, one can see a closed glass box (27 x 10 x 10 cm) hosting the Paul trap and the lycopodium spores when the work is activated. In the alignment of this box there is a projection lens that allows for the tiny device to be blown up onto a bigger screen (round screen or round projection on a regular screen).

On the left of the image, in the back, one can see the laser beaming its light onto the trap and the «captured» spores. On the left, in the front, is the voltage transformer.





Close up of the Paul trap in its glass chamber (27 x 10 x 10 cm) with the 2 cm ring electrode and two 1 mm sphere electrodes.

DISPOSITIF

The basis of *Ion Hole* is a scientific experiment that enables electrodynamic levitation.

Unlike the ion trap experiments in physics labs, this one does not involve a high vacuum at low temperatures – it takes place under normal atmospheric pressure. And instead of single atoms as are customarily trapped in quantum optics and quantum simulation research, the artwork levitates lycopodium moss spores, often used in fireworks, around 20 microns in size.

However, the principle, the techniques and the physics are the same and allow the audience to witness through their naked senses otherwise invisible particles and, as they oscillate, the electric field suspending them.

CREDITS

«Ion Hole» has been created by Evelina Domnitch and Dmitry Gelfand
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RySQ: http://cordis.europa.eu/project/rcn/193719_en.html

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