

# UNIFYING CHAOS

A QUANTUM MUSIC PROJECT

## ARTISTS

VALERIE SCHALLER projections

[www.valerie-schaller.com](http://www.valerie-schaller.com)

CHRISTIAN TSCHINKEL composer / acousmatics

<https://www.acousmonuments.space>

PROF. DR. RUPERT URSIN scientific consultant

[www.iqoqi-vienna.at/people/ursin-group/rupert-ursin/](http://www.iqoqi-vienna.at/people/ursin-group/rupert-ursin/)

MARKUS HRUSKA assistance for special effects

# Schaller & Tschinkel

## WHO WE ARE



We are an artist Duo based in Vienna and completing art projects out of a high intuitive work flow.

As we come from the same planet it is not our duty to work on conceptual brain controlled intellectual state of mind but from an intelligent spot between stellar stars, heart frequencies, earth magnetic core and the fluid of permanent renewing energies.

The proposal of our project is a sketch and a glimpse of what is going to take place in the context of the Quantum Music project.

We have the courage to let it grow in the artistic process which immerses from our mutual intelligent channel of creation.

Here documentation of our last project:  
(description, photo & video documentation)

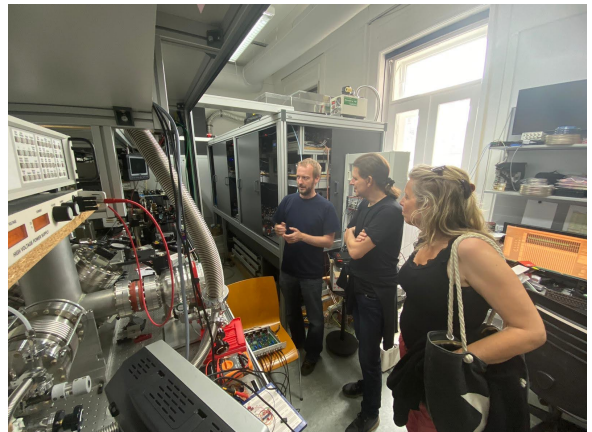
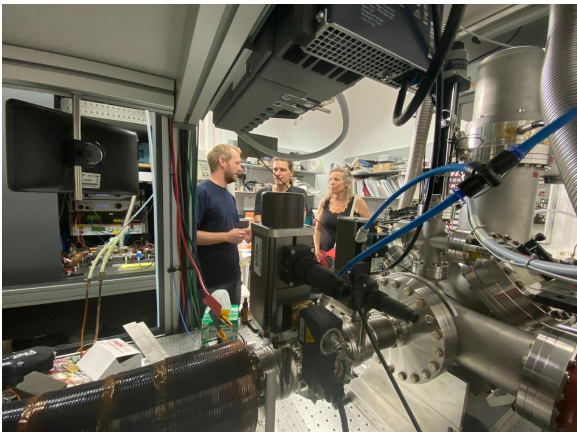
[NebenErde / PararEarth >>](#)

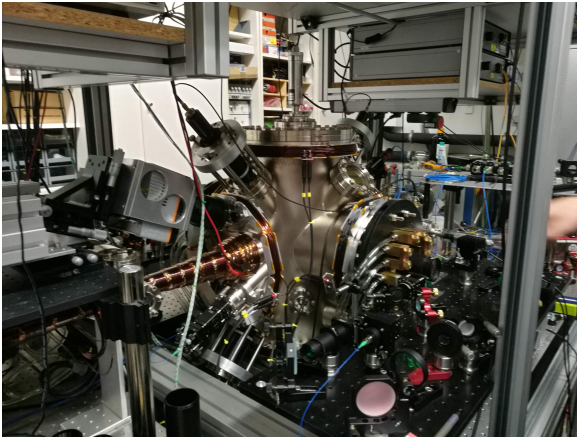
## VISIT AT THE QUANTUM MECHANICS LAB

In august 2020 we met Prof.Dr. Rupert Ursin, group leader and senior scientist at the IQOQI in Vienna.

We had an intensive exchange and interesting teachings about quantum physics and visited the Bose Einstein Condensate Lab in his department at University of Vienna.

There we got an impressive insight of the complexity of BEC experiments and very detailed explanations from the scientists.





## OUR APPROACH

The essence of BEC is the phenomenon of the randomly chaotic moving particles in the vacuum space.

After being exposed to extreme low temperatures they lose their particular properties and unify into a common wave, they all become unified.

We are using this phenomenon of BEC and extract this issue into a philosophical point of view and use this as an essential base for our artistic approach.

The vacuum is a space of stillness and free from any disturbance. (in the ideal case)

The scientists are busy most of time to keep the vacuum clean and undisturbed to make the BEC experiment as clear as possible.

In this stillness the particles are losing their properties.

First the particles are in a chaotic order and randomly moving around, each one has a different frequency. It is hot and red and the more it is cooling down the more it gets quiet, slower, cooler, blue - until reaching a homogeneous unification.

A basic ground state is generated.

In the ground state we have the embodied sound sculpture in the space.

The agitation slows down and flows into a basic vibration through all the loudspeakers.

Visually the particles flow into a huge single frequency which fills the whole space and carries the attendees into its gigantic flow.

Each single BEC experiment lasts only some hundredth of a second in the lab.

We expand the BEC in a time and space macrocosmos.

The attendees immerse into a sea of wave and particles and become part of this whole universe.

## AUDIO

The music for *Unifying Chaos* is a 16-channel composition that starts with a chaotic noise and ends in a 20-minute loop that turns into a "mono sound". On the auditory level it represents a passage of the measuring process in generating a Bose-Einstein condensate. If a scientist starts a series of experiments, it is no longer possible to intervene in the process, which is why it is not an interactive sound installation. Rather, the listener has the role of the (scientific) observer who is given a conveyed testimony!

At the beginning, high-frequency stochastic clicks without recognizable pitches can be heard. High tones with different frequencies in quick progression come from different directions and spatial positions, which additionally are provided and charged with different artificial spatiality resp. different spatial information. On the one hand, the noise steers towards a vacuum over time by filtering out many of these quick clicks, on the other hand, the kinetic energy in the remaining ones is reduced. Frequencies decrease, the particle lengths lengthen to perceptible pitches, which however continue to decrease continuously. All tones begin to adjust to one another and gradually move into a single fundamental oscillation that sounds equally from all speakers – so to say in mono. A new artificial aggregate state has been reached. A new quantum state is the result in which all (sound) particles form a new unit.

In addition to the installation mode, we consider great importance to promoting an acousmatic sound production in which an acousmonium corresponds to a spatial projection surface. The idea of the holistic projection as a metaphor for the polyphony of the world flows within the acousmatics into a contradicting setting of sound and image and into the performance of a sound director who acts in concert at specific times. Thus the difference between the installation mode and the human intervention through the spatialization of a stereo -file of the same music can be perceived and heard.

[audio sample here >>](#)



## VISUALISATION

The video projections are projected on the floor and on the ceiling.

Since we do not know the exact size and situation of the room, it is not yet clear how we will place the projection surfaces. (see modalities)

As the sound of Quantum music is filling the whole space it is a way to have the diversity of particle movements between chaos and unity on the floor and also on the attendees themselves.

In analogy to quantum entanglement the floor projection is simultaneously mirrored on the ceiling.

There is an alternate play of randomly moving particles in the space which are slowly accumulating and unifying into a pulsating, rotating and flowing wave or element, filling the room and entraining the whole energy of the space.

The size and color of the particles is various as well as the speed according to the change of temperature of BEC.

The more the temperature is cooling down and the particles are losing their properties the more the colors become cold (blue) and the speed will decrease.

The other aspect of the visualization is the fact of wave - particle - dualism which is a main issue of quantum physics. Both are appearing in alternation and moving in a complex vibrancy.

When the atoms enter the vacuum they spread out and are distributed in a homogeneous way.

When they reach the common state they become an unity which is the BEC state.

The video shows these different states of the particles coming in, randomly moving and finally being assembled to a homogeneous shape.

[see audio - video work samples here >>](#)

The real video projection will be much more specified and refined. Particles rounder :-)

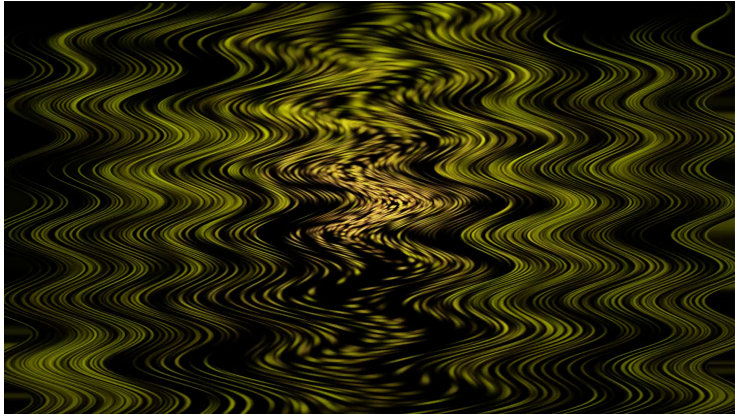
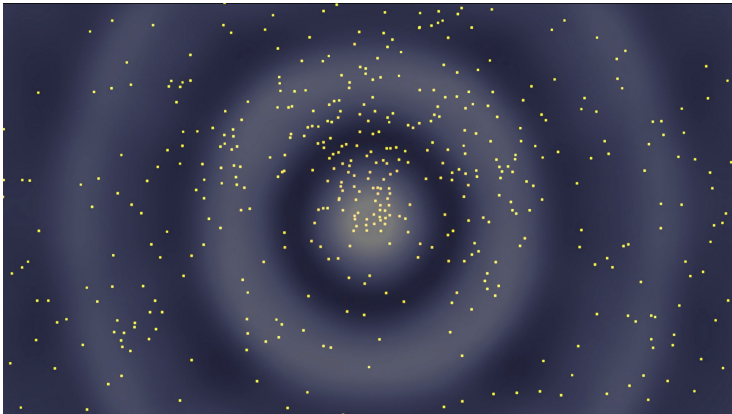
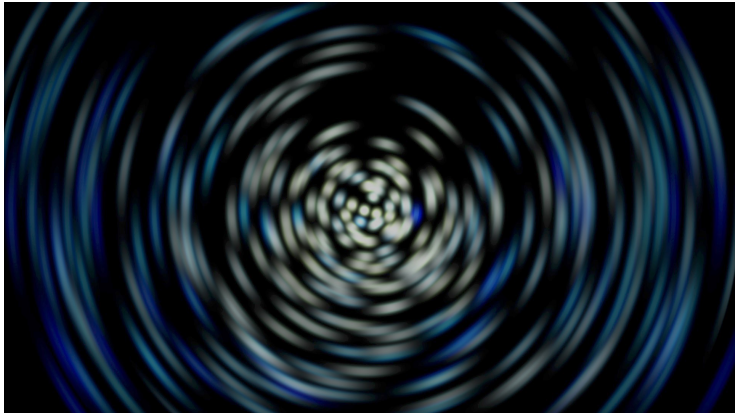
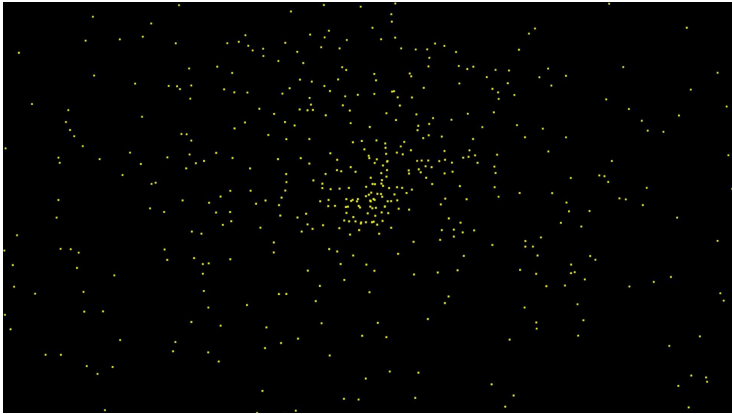
This is just a sample.

The video projection of the installation has a length of about 20 minutes in a loop.

The attendees can sit in a comfortable seat cushion, relax and immerse into the sounds of quantum music. They become part of a huge energetic scenario being also lightened by the particles and watching it at the same time on the ceiling.

The principle of Quantum Mechanics is a phenomenon which concerns every material matter because we are all consisting of atoms, molecules so to speak we are part of the condensation process.

Video Stills of video projections\_work samples



## MODALITIES OF THE INSTALLATION

The space is completely dark.

As we do not know the exact size and situation of the room, it is not yet clear how we will place the projection surfaces.

It's certain that there will be a projection area on the floor.

Another one on the ceiling.

If the ceiling projection is not possible then we project on one wall.

The projection surface on the floor is circled by 16 loudspeakers standing in a concentric circle.

On the floor are some large cushions to lay.

We deliberately avoid interactive elements.

The videos and the sound play 20 minutes in a loop, in normal installation mode

## MODALITIES MODALITIES sound

### MODUS 1

The videos and the sound play 20 minutes in a loop  
(16 channel composition)

### MODUS 2

The concertante acoustic performance under the sound direction of the composer Christian Tschinkel will take place over one (or more days) and will then go into the ongoing installation process.

(stereo production, acousmatic audio spatialization live)

## TECHNICAL REQUIREMENTS - Video

The technical requirements depend on the size and situation of the exhibition space. It depends especially of the height of the room how many projectors are required. The artist cannot provide the projectors and some technicians are needed.

For a projection **surface from about 100 m2 and 5 m high**:

1 projector with 25.000 - 30.000 ANSI Lumen would be enough for the floor  
1 projector with 10.000 - 25.000 ANSI Lumen for ceiling

For projection surface about **100 m2 and 3 m high**:

3-4 projectors with 6500 ANSI Lumen floor  
3-4 projectors with 6500 ANSI Lumen ceiling

3 - 4 Media players and distributors (resp. splitter / Synch possibility)

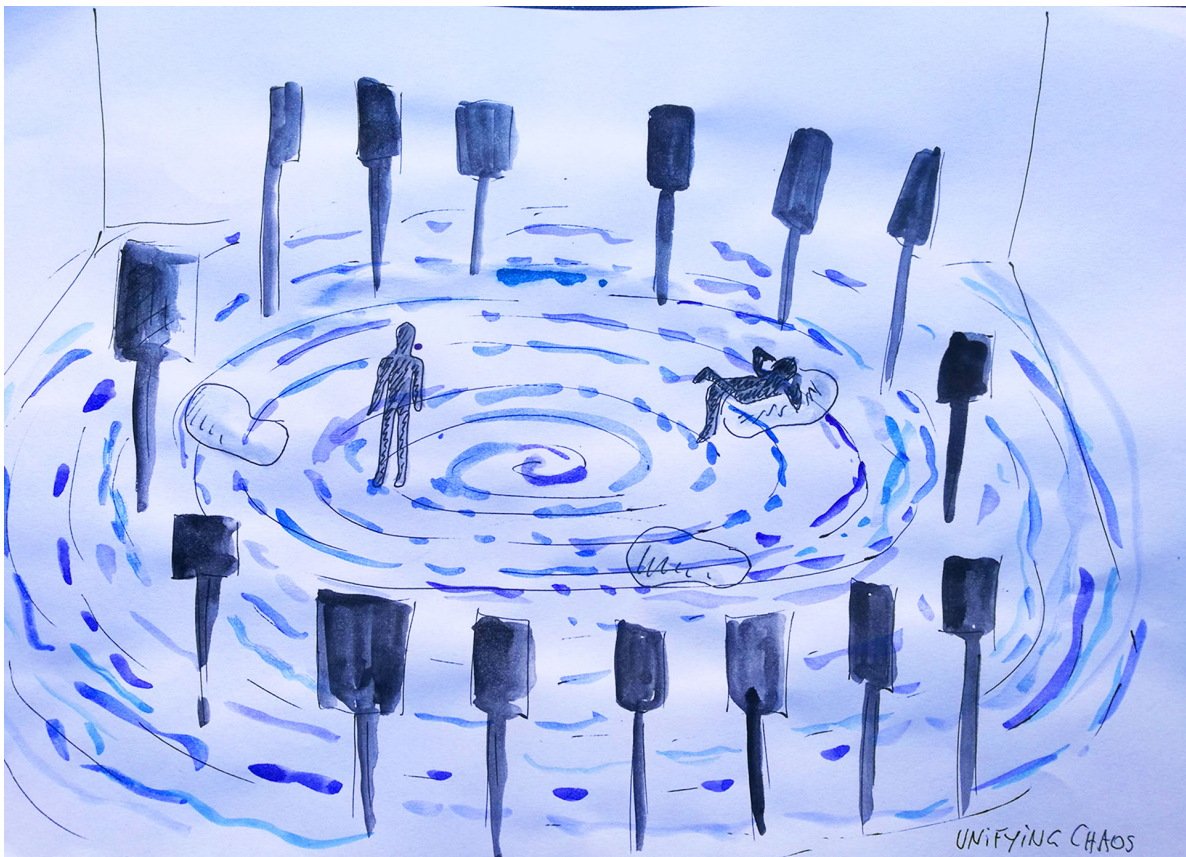
## TECHNICAL REQUIREMENTS - Audio

All the audio technical equipment can be provided by the artist.

- 16 active speakers on stands with cables
- 1 subwoofer (+ frequency separating filter)
- Laptop with multichannel software
- 16 channel sound interface (Motu 16a AVB)
- Faderport 16 (Presonus)

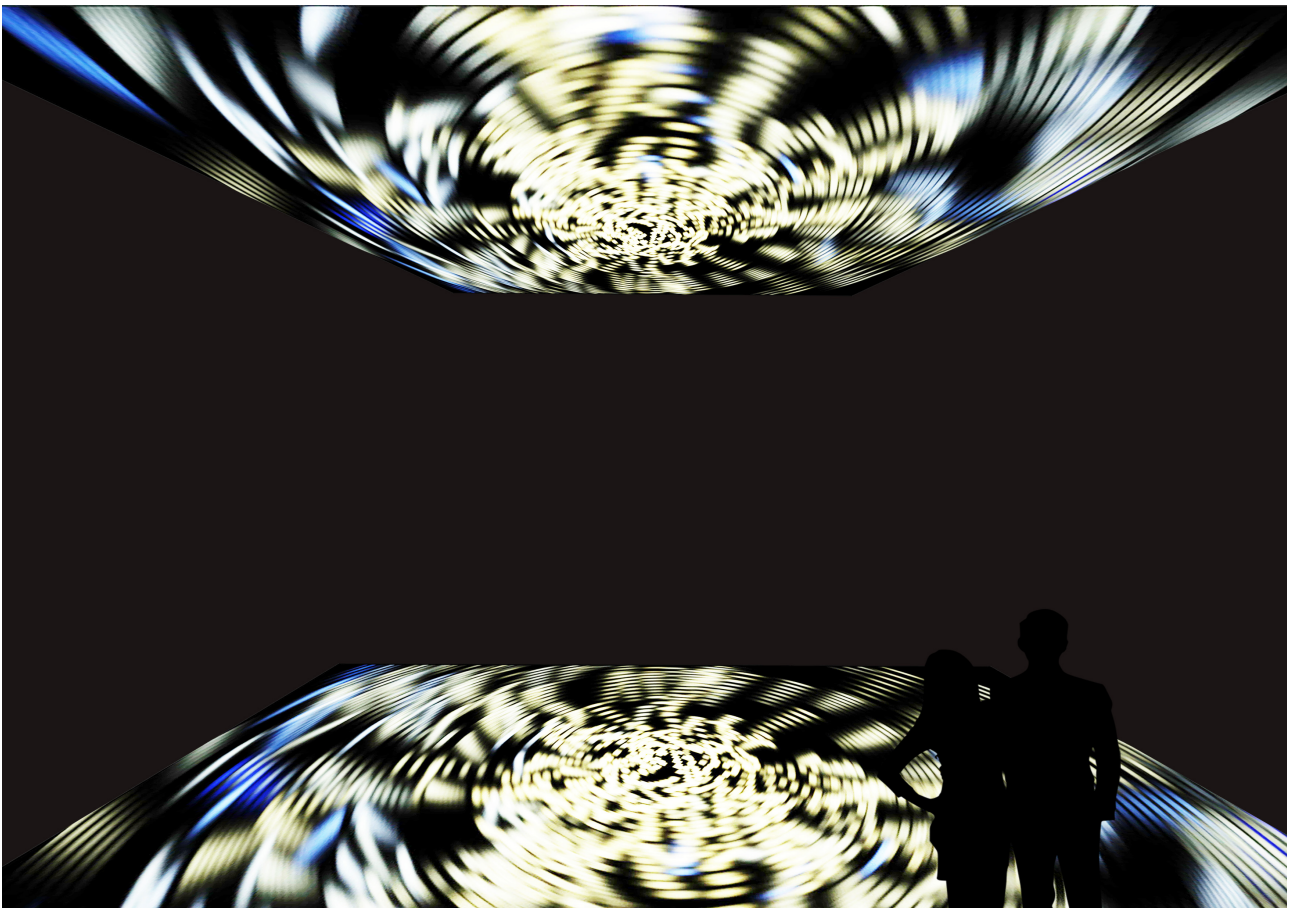
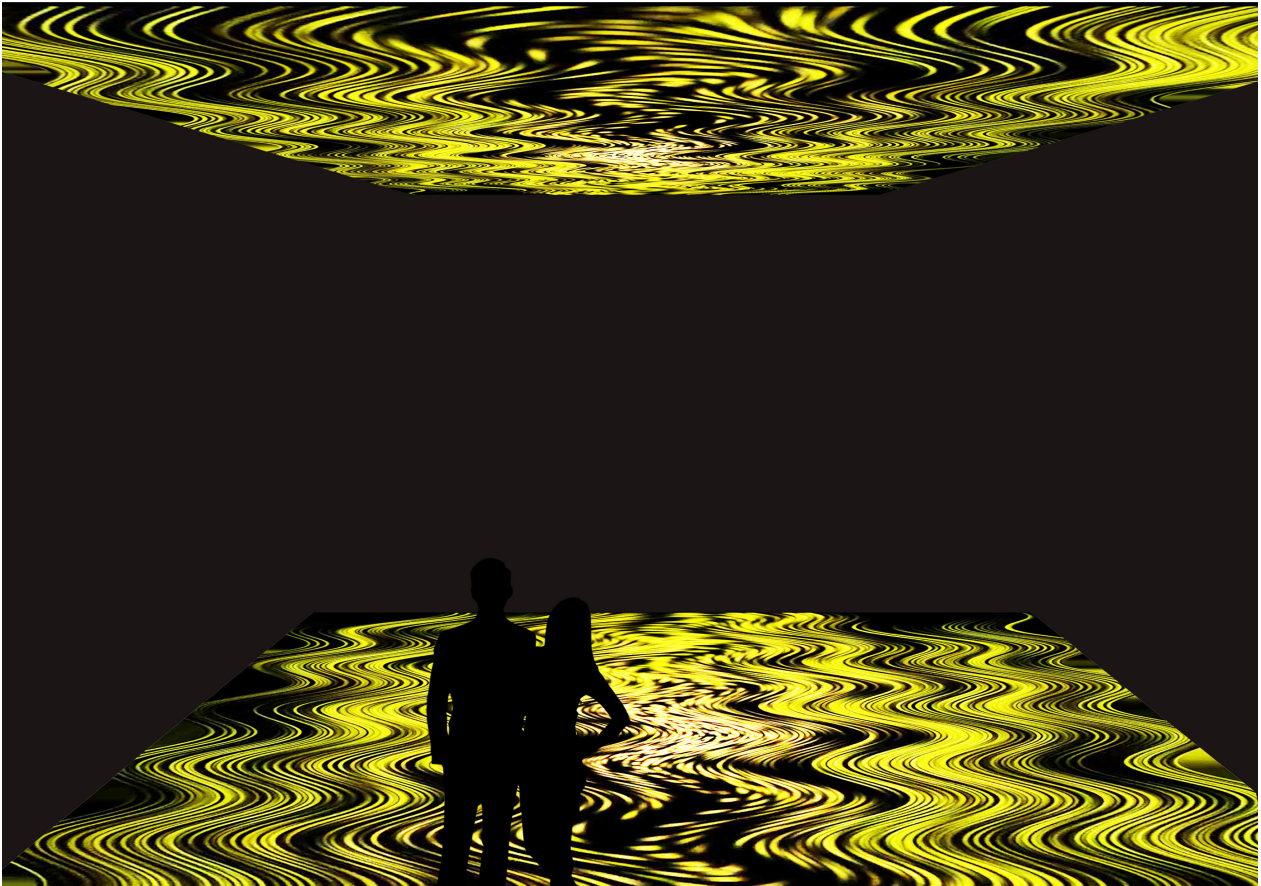


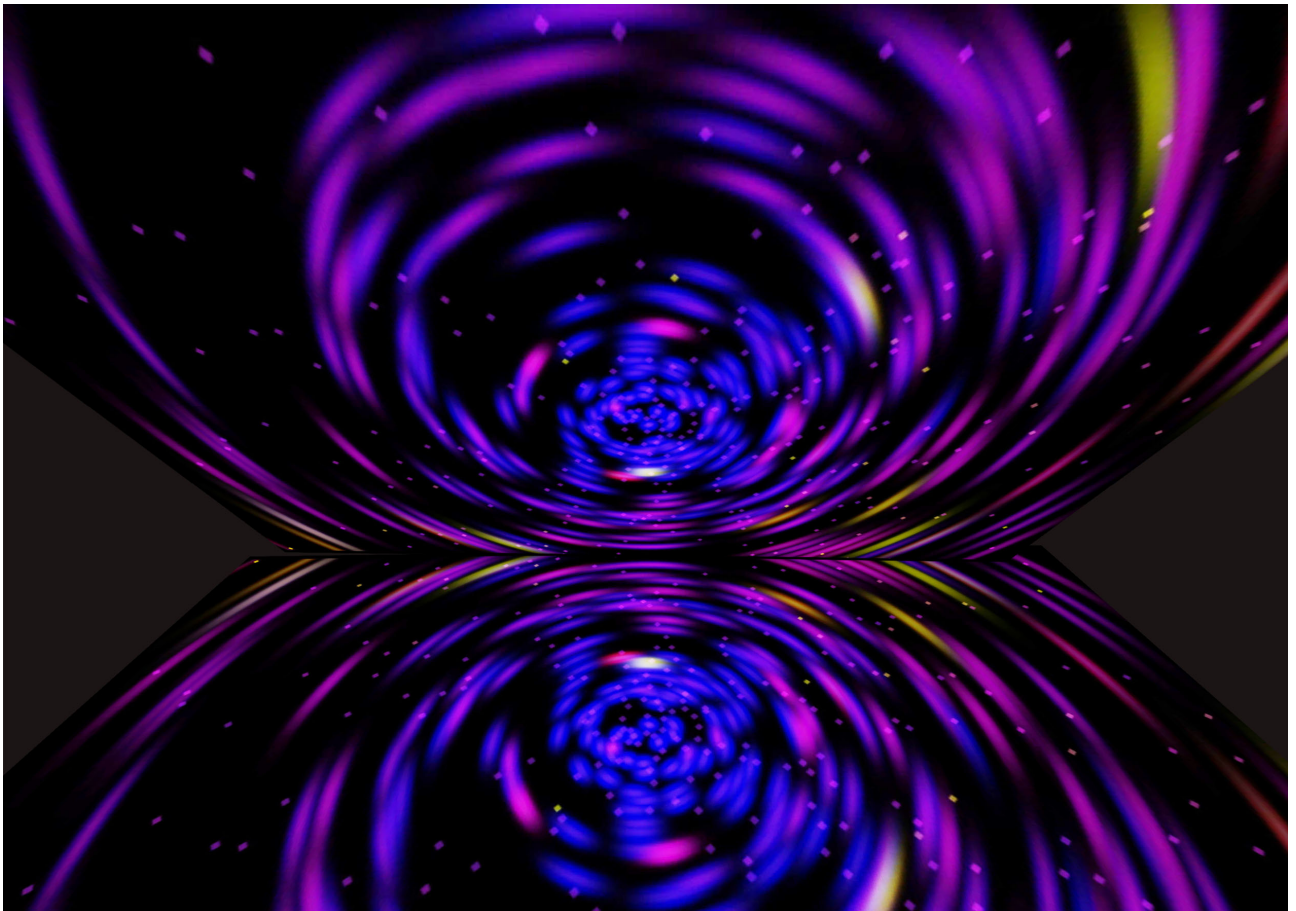
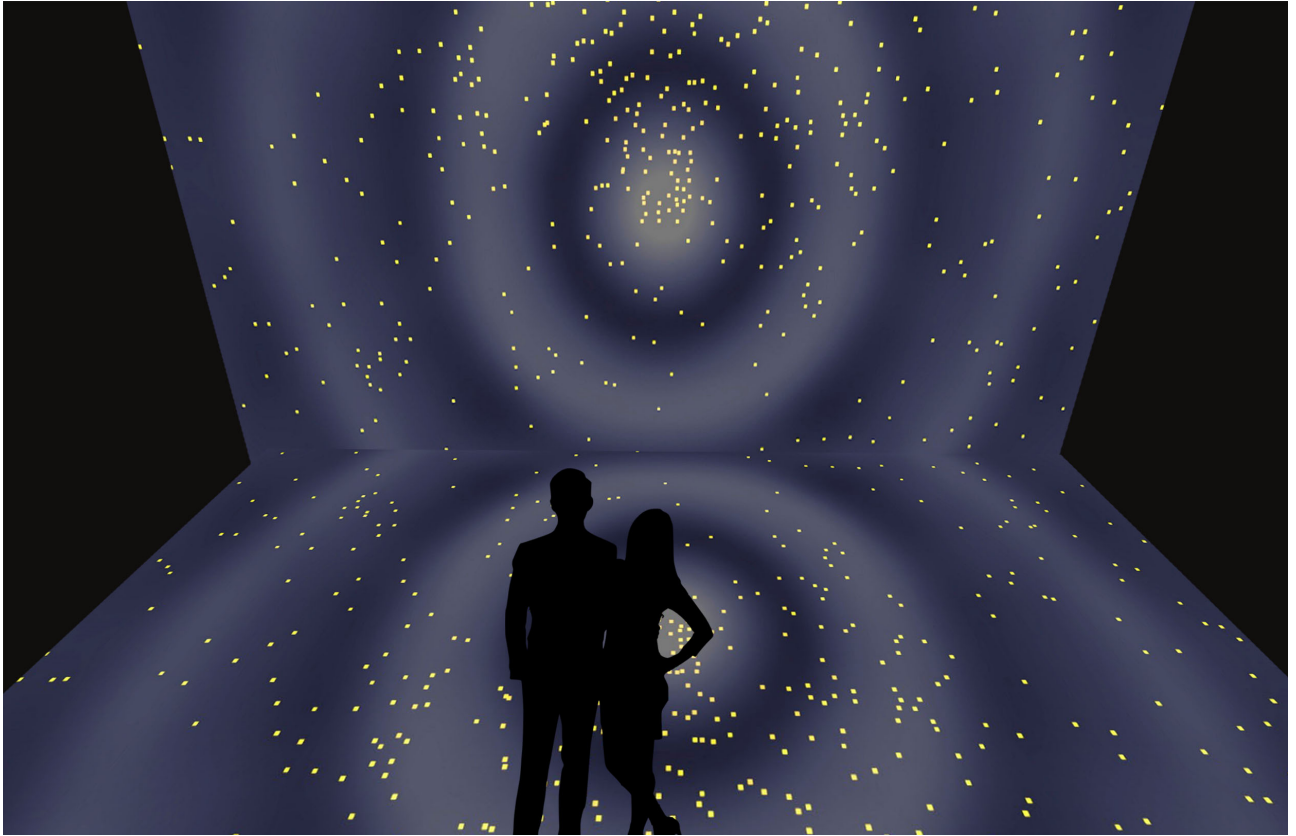
Model / Sketch of the Installation with floor projection & loudspeakers





Model / presentation of the projections







# Sketches work process

Description: Acousmonium ---  
depending on the room size

Stick-in-Xion excerpt ~ 3 min  
acousmatic 4 2 min unbedingt  
2-Audio Performance \* das ganze  
- modi -  
Gloss vorweg (visualisiert + sonifiziert)

sound condensation  
[unifying chaos]

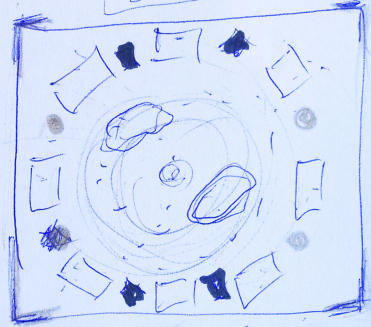
UC  
vacuum = silence =  
Stille als Funktion einer Einheit  
Grundschrindung treffen → Klangkörper  
Pumpen = Sympa + Schwingung

Burkhard Heim  
Zyklischer Strahlfluss  
6-dimensional

audience is taking place in this space immersive

according to the research of quantum...  
penning the vacuum → unifying chaos

BEC



12 speakers  
~~16 speakers~~  
acousmonium

UNIFYING CHAOS  
a quantum music project

