



2002
2017

public works Tim Otto Roth



*background: KASCADE cosmic ray detector field, where
„Cosmic Revelation“ in spring 2009 took place.
Karlsruhe Institute of Technology (KIT)*

works in public space and installations by
Tim Otto Roth

awarded among other things with:
German Light Art Award LUXUS
Lüdenscheid 2004
International Media Art Award
Center for Art and Media ZKM Karlsruhe
Honorary Mention
Ars Electronica Linz 2009

issue: spring 2018

2002
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public works Tim Otto Roth



*Limpurgergasse at Frankfurter Römer
Leuchtspur, MMK Frankfurt
video backprojection, ca. 3 by 4 m
April till August 2002*

Leuchtspur

One of Tim Otto Roth's most amazing discoveries in the sector of cameraless experimentation with photosensitive surfaces was the invention of the video chip photograms in 2000. Putting objects not on photographic paper but on video chips, the resulting video photograms are a physical attack against the silicon core of every video or digital camera. He developed a special machine to expose the objects with a continuously moving light, so a never repeating shadow clip of an object can be watched on a screen or by a video projection.

In 2000 he showed the first photogram series as a live streaming in the internet as a kind of comment on the disposal of places by the ubiquity of web cams. For the exhibition „Leuchtspur“ of the MMK (Museum für Neue Kunst) Frankfurt in 2002 he presented the work for the first time as a projection work in the public space at the historic town hall of Frankfurt.

participating artists: Urs Breitenstein (Frankfurt) Dan Flavin Sebastian Fleiter (Kassel) Architekten Hahnenfeld (Frankfurt/ Berlin) Index Architekten (Frankfurt) Josph Kosuth (New York) Thomas Lüer (Frankfurt) Sandra Mann (Offenbach) Gabriele Muschel (Frankfurt) Jaume Plensa (Barcelona) Satis & Fy (Karben) Susa Templin (New York) James Turrell (Flagstaff/Arizona) Dirk Vollenbroich (Münster) Achim Wollscheid (Frankfurt)

Curator: **Rolf Lauter**

www.jenseits.net

*the photogram enters Liliput >
shadows are captured not by photo paper
but by a CCD video chip*





100 Tage - 100 Imaginationen

100 Tage - 100 Imaginationen
daily changing digital projection
Campus of the University of Kassel
9 by 11 m, 9 June till 15 September 2002

The *100 Days - 100 Imaginationen* appeared for the first time in 2002 parallel to documenta 11 for 100 days as a daily changing digital projection of enormous 9 by 11 meters on the Campus of the University of Kassel. The series of abstract internet based images appeared simultaneously at the Walter Storms Gallery in Munich on a flat screen.

The *Imaginationen* formally oscillate between painting, light and media art and open new pictorial possibilities in the public space. A serial superposition of two vertical scaled patterns forms the base of the project. Everyone knows the phenomenon, if one throws a stone into the water and observes how the waves superpose mutually. With the *Imaginationen* one of the wave samples changes per day varying in the colour and in the amount of scales according to a simple serial principle based on the circle number of pi. 2003 the *Imaginationen* appeared for the first time in a scientific context at the most northern civil knot in the World Wide Web at the Koldeweystation of the Alfred Wegener Institut at the King fjord on Spitzbergen.

www.imagination.net/next100

Imaginationen at the Top of Europe >
screen presentation at the High Altitude Research Station
Jungfrauoch (CH), 29 January till 9 May 2005





barroco
large image slide projection
German Diamond & Gemstone Bourse
Idar-Oberstein
40 by 40 m, October 2003

barroco

With *barroco* Tim Otto Roth created a special interplay between near and far performed by means of a large projection measuring no less than 40m. The project was shown between October 3 and 6, 2004 at the occasion of the International Gemstone Trade Fair held at Idar-Oberstein.

In his *barroco* cycle, Roth approached the world of gemstones via the rare shadow capturing medium of the photogram. Comparable to X-ray pictures, he exposed the precious stones directly on slide film. He worked in an impressive private collection in Idar-Oberstein - the German capital of gemstone industry - and created shadow pictures of about 50 different types of minerals, mainly of natural untreated rough gemstones.

These exceptional and strange perceptions of gemstones were changed into a colourful play by the projection on the surface of the 80m high German Diamond and Gemstone Bourse, thus causing arts and architecture to enter into a baroque-like dialogue of surfaces. Gemstone photograms and façade interacted like a picture puzzle recomposing in accordance with the observers' distance.

www.photograms.net/barroco

barroco in the German capital of gemstones >
panorama view on the townscape from a mountain





I see what I see not

*I see what I see not
Pixel trip in the GOODS Chandra Deep Field
76 light elements controled via internet,
Kunstfassade München
9 by 6 m, November 2003 till March 2004*

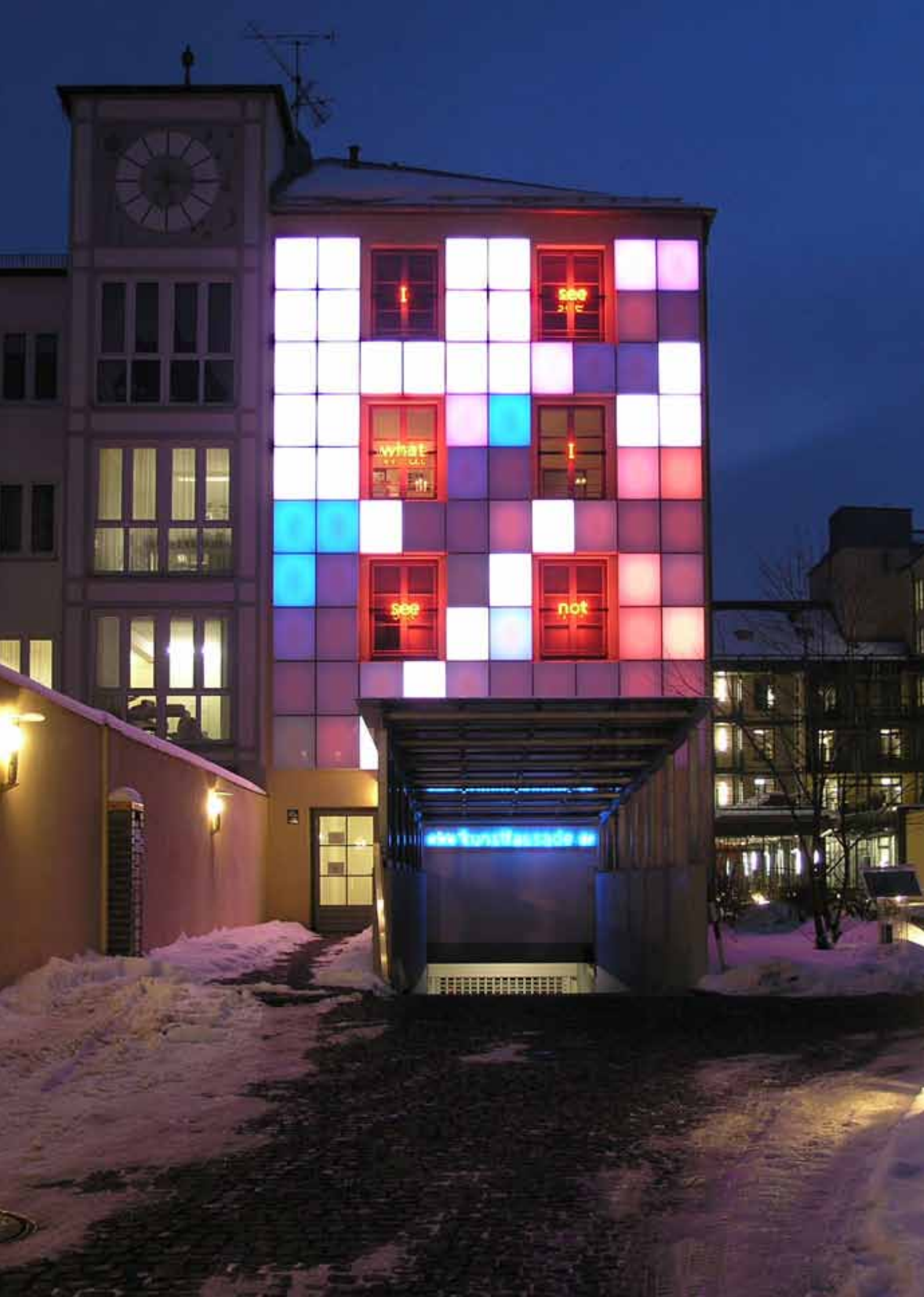
In 2003 Tim Otto Roth was invited by the Lenbachhaus to develop a concept for the art façade of the Communication Group Serviceplan during the winter months. This media façade close to the Königsplatz in Munich is particular because its 76 RGB light panels spread over 63 square meters can be controled via internet. With *I see what I see not* Tim Otto Roth created a cosmic matrix showing the most advanced results of the vision machines in astronomy and elementary particle physics. „A beautiful game about the autonomous extension of constructive art by the means of physics“ (*Süddeutsche Zeitung*).

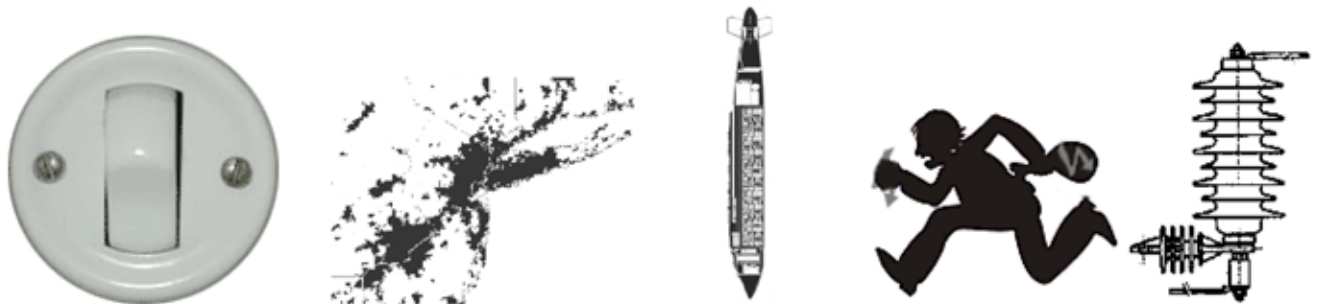
For Tim Otto Roth the art façade represented a formal challenge. The basic question was whether it would be possible to show something that still could be called a picture, on an area, which consists solely of 10×10 picture elements - this corresponds to the diameter of a match on a normal computer screen. This is because the artist decided to explore the images of astronomy and particle physics. In these advanced disciplines already few pixels detected by the image sensors and detectors can refer to an astronomical object or a subatomic particle. So he zoomed on the pixel level of images like from the Hubble Telescope, Chandra, ESO's Very Large Telescope, the WMAP or the Brookhaven's STAR detector and conveyed the pixels 1 to 1 on the light elements of the art façade. In this way the light game on the art façade became a walk on the retinas of the extreme sciences, that investigates the most distant and next boundaries of the cosmos.

I see what I see not was awarded in autumn 2004 with the International Media Award of ZKM and SWR for its special relation between science and art in the public space. In the following second cycle in winter 2004/05 live data from laboratories around the world were transmitted in near real time to the façade.

Curator: Marion Ackermann
www.kunstfassade.de/tor/i-see-what-i-see-not.html

*live collision 2005 in Munich >
CDF event from the Fermilab in Illinois*





Switch Off

„five ways to switch off the light“
www.switchoff.org

Tim Otto Roth was awarded with the first German Light Art Award „LUX.US“ on 5 March 2004. For the city of Lüdenscheid he developed the concept *Switch Off* - a reaction on the urban light pollution inspired by the recent blackouts in Northern America and Italy. Switching of the current for one hour he wanted to sensitize the 80.000 inhabitants of the city of Lüdenscheid for the night sky as a rarely perceived source of natural light and to remind to the infinite space above us. Uwe RÜth wrote in the jury's plea: "To win a light award with an action centring the darkness implicates to render moot the whole light art and to disclose that light can't exist without darkness".

The project was already in the advanced stage of realization. But finally the project failed in the „city of light“, in spite of an intensive dialogue with the power supply company of Lüdenscheid. The decisive factor for the failure of the realization was that the radicality of the idea, for which it finally was priced, could not be reconciled with the premise of the power supply company, that *Switch Off* should be based solely on the voluntariness. The artist understands this political decision of an enterprise. However an ambitious art project failed again because art offered a striking surface and resisted a simple consumption.

Nevertheless *Switch Off* in Lüdenscheid had already a couple of effects: the project brought together an artist and an energy provider in order to discuss on a round table earnestly how one could turn off for an hour the light in a 80,000 inhabitants counting city. In several articles and press releases already the population was informed - whereby the expected outcry failed to appear. Finally with the promise of the minister of culture Dr. Michael Vesper to function as a patron the project got top-level support!

Switch Off is failed therefore in no case, it will be realized however in another place.

www.switchoff.org

the awarded concept: www.photograms.net/press/luxus/luxuskonzkurz.pdf

plea of the jury: www.photograms.net/press/luxus/luxuxpleajury.pdf





100 Tage - 100 Imaginationen
daily changing digital projection
 ZKM Karlsruhe

3 by 12 m, 26 November 2004 - 06 March 2005

Picture: Daniel T. Braun

100 Tage - 100 Imaginationen

On 29 November 2004 started a third cycle of the *Imaginationen* at the ZKM Karlsruhe and at Schloß Dagstuhl, which was complemented at the End of January 05 with a presentation at the High Altitude Research Station Jungfrauoch.

The Center for Media Art ZKM Karlsruhe functioned as an institutional interface between art and science. The back projection of 3 by 12 meters in the subroom of the ZKM cube in direct neighbourhood to Paik's „Internetdream“ was large but nevertheless ephemeral. Around the clock the daily changing picture series was projected by three projectors. Disappearing nearly completely in the bright of the day, the impression of a hardly definable mediality and materiality of the *Imaginationen* was reinforced by the spectators movement around the glass cube in the dark. In an interview Beat Wyss emphasized the process of deceleration of the web based *Imaginationen*. With reference to Marcel Duchamp he spoke about a „retardation of the calculating process.“

From 28 January till 06 May 2005 the *Imaginationen* appeared as a screen presentation at the High Altitude Research Station Jungfrauoch above the Aletsch - the largest glacier of Central Europe. The crucial question of the project „What imaging could be today?“ found at the „Top of Europe“ an adequate extension. Since the 1930's important discoveries in the fields of physiology, meteorology, glaciology, radiation, astronomy and cosmic rays have been made at the station in Central Switzerland.

Curator: *Peter Weibel & Barbara Könches*
www.imagination.net/next100

Imaginationen at the exhibition
„Genau+anders - Mathematik in der Kunst
von Dürer bis Sol LeWitt“ at MUMOK Vienna
28 February till 18 May 2008 >





Pixelsex
80 m light wall at the KPN Telecom Tower Rotterdam
for the first time the 900 Planon lamps were controlled via internet
Wereld Witte de With Festival
9 - 11 September 2005

Pixelsex

Pixelsex brought „life“ to the world's largest light façade at the KPN Telecom Tower in Rotterdam built by Renzo Piano. The fight about life and death was visualized in a minimalist manner by a so called cellular automaton, whereby the pixels - the single picture elements - do have sex with each other, new pixels are born and other pixels die. By its amoeba like movement *Pixelsex* animated in a literal sense the 900 green Planon lamps of the giant facade with a height of about 80 (!) metres.

It was the first time that dynamic content was shown at the KPN tower's façade! Therefore Tim Otto Roth connected the façade to the internet and transmitted in near real-time scientific simulations based on the *Pixelsex* principle from Dresden/Germany to Rotterdam. He cooperated with Jörn Staruß, member of an eminent bio modelling research group around Dr. Andreas Deutsch at the High Performance Computing Centre at Technische Universität Dresden, who created a cellular automaton showing the group dynamics of myxo bacteria.

Pixelsex was presented at the KPN Tower from 9-11 September 05 in cooperation with the V2-Institute Rotterdam in the context of the Wereld van Witte de With Festival. Parallel to Art Rotterdam *Pixelsex* was relaunched in February 2006.

Curator: *Stephen Kovats, V2*
www.pixelsex.org

bringing live to the KPN Tower >
myxo bacteria reanimated the light wall





*view from the Corniche
at the „100 Days - 100 Imachinations“
at Bibliotheca Alexandrina
projection diameter ca. 8 metres
28 August - 5 December 2005*

١٠٠ يوم — ١٠٠ ايماشينيشنز

Following the steps of its ancient namesake, the new Library of Alexandria seeks to become Egypt's window to the world and the world's window to Egypt. The Norwegian architects Snoetta created a library architecture making a fusion of western architecture and oriental elements hold together by a large ring-shaped wall. The projection of the *Imachinations* on the triangular wall part of the neighbouring conference building relates to the round architecture of the Library and the smaller planetarium as well. Historically the project links to the Alexandrian Klaudios Ptolemaios as one of the first mathematicians, who made a quite exact approach to Pi with 5 digits: 3.14166.

The *Imachinations* at the Bibliotheca Alexandrina created one of the first large media art projects in the public space in Egypt. The abstract circular digital projection with a diameter of about 8 metres in the heart of the metropole related, using digital means, to the old oriental tradition creating patterns. For instance the small stones in mosaics or the knots in the grid of a rug creating a complex imagery often based on simple mathematical rules can be considered as ancestors of the computer pixel. Combining this abstract tradition with new media the *Imachinations* created a productive irritation and eye catcher in the public space, because today abstract pictures are rarely known in Egypt.

In cooperation with:
Goethe-Institut Kairo/Alexandria
Egyptian-German Friends of the Bibliotheca Alexandrina

www.imachination.net/next100

*reflections in the basin in front of the Bibliotheca>
digital projection on the neighbouring
conference center of the library*





Cosmic Revelation
public light installation at light art festival 'Aufstiege',
16 cosmic ray detectors, skybeamer and 27 power strobes
SV SparkassenVersicherung, Stuttgart, Autumn 2016

Cosmic Revelation

Here, by contrast, we stand as witnesses to the chaotic drumbeats of cosmic radiation. The new music is that of quantum mechanics and complexity - probabilistic rather than deterministic. A new art is encoding a new science. Martin Kemp in NATURE|Vol 458|16 April 2009

Cosmic Revelation is a minimalist light art project and a scientific experiment as well. 16 flashing mirror sculptures changed the array of the KASCADE experiment at Karlsruhe Institute of Technology (Germany) with its 252 gauging stations into a giant light field of 44.000 sqm. One or two times per seconds the cosmic energies reveal its existence in bright flashy moments triggering the high power strobe units of 1500 Watts mounted in these „Cosmic Mirrors“. So can the impact of high energetic cosmic rays on earth be bodily experienced. As a new kind of land art the flashing field not only refers to the physical processes in matter, but hints also at the protecting and moderating qualities of the atmosphere as basic condition to create on earth a biosphere.

During the light art festival *Aufstiege* in autumn 2016 Tim Ott Roth presented *Cosmic Revelation* in a new way. The four stairwells that form the four corners of the SV SparkassenVersicherung headquarters in Stuttgart are lit up in red. Now and then there is a flash of white light. On the roof a bright narrow light beam reaches up to the sky, pointing out that this illumination comes from the earth's atmosphere. Sixteen highly sensitive detectors are measuring cosmic radiation in real time. When it penetrates the earth's atmosphere it leaves behind a cascade of invisible particles, which become visible as flashes of light in the stairwells.

Curator: *Joachim Fleischer* (2016)
www.imagination.net/cosmicrevelation

a line of four "Cosmic Mirrors" in the KASCADE field, March 2009 >
picture: Markus Breig, KIT





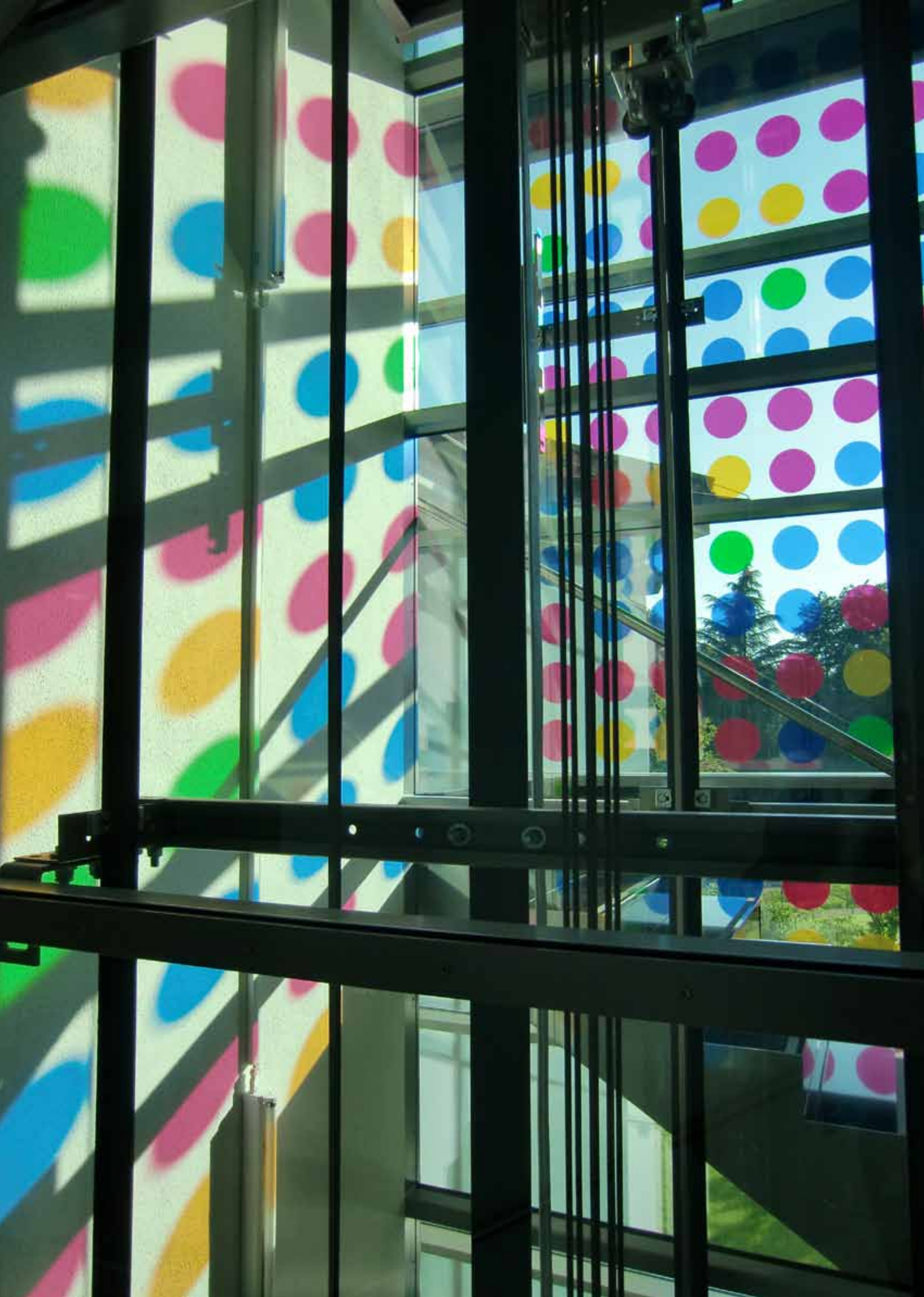
*„Chromology“ with 16 colour wheels
Städtische Museen Wetzlar (D)
exhibition „Iris“ 2009/2010*

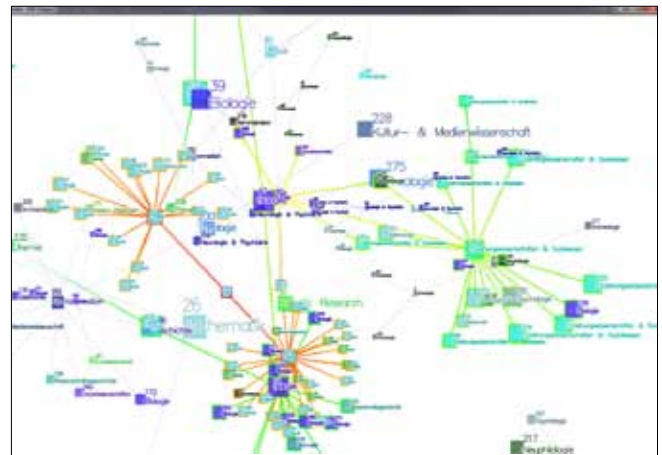
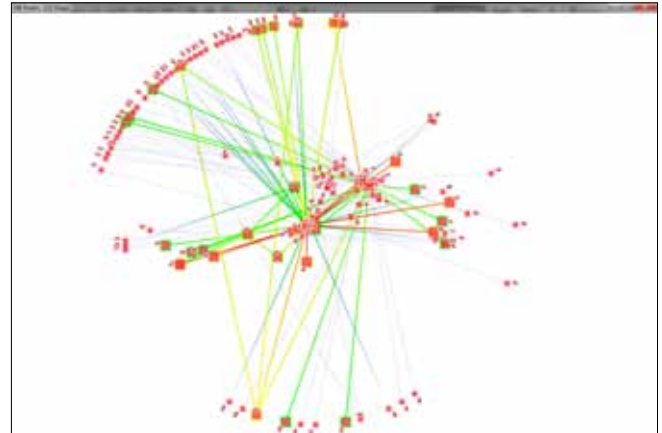
Coloursex & Chromology

The self-organisation of colour is the core principle of *coloursex*. Colour notations as developed by Paul Klee are enhanced by a dynamic interaction. Dots of transparent colour foil mounted on large windows create a matrix of interacting colours which can be read line by line. Based on this principle window installations were realized since 2009 among others in the Verein für aktuelle Kunst, Oberhausen or at Festspielhaus Hellerau, Dresden.

Chromology functions according to a similar principle using standard disco colour wheels as interacting „colour clocks“. The local interactions between the wired colour wheels create a dynamical colour network system. For each new exhibition the wiring and consequently the neighbourhood rules are changed. Spot lights project on the opposite wall the changing integral of the interacting colour clocks.

www.pixelsex/coloursex





*Facing Science as
screen presentation Berlin Adlerhof (left)
and its network visualization (right)*

facing science

Facing science gives a dynamic face to the scientific network of people connected to Berlin fusing the scientist's portraits into a movie projection. Each digital portrait of a person is represented by a single picture frame. In that way 1440 faces per minute pass by the spectator's eye to merge in a continually changing visage. So unlike the „composite photography“ used in criminalistics the pictures do not merge in a static archetype, but conjoin into a dynamic time based changing continuum.

The animation was presented as a projection in the jubilee exhibition „WeltWissen“ at the Martin-Gropius-Bau (24.09.2010 - 09.01.2011). The number of participants has grown till the exhibition's end to 300 scientists from 37 Berlin based institutions and 47 research cooperations. The resulting network reveals connections to numerous researchers in the rest of Germany and further countries in 4 continents. Parallel presentations took place since November 2010 at the Institut für Mathematik und Informatik of Freie Universität Berlin in Dahlem and at the Erwin-Schrödinger-Zentrum on the Campus Adlershof.

A crucial part for the production of *facing science* played the web. Scientists can easily participate and upload their pictures via internet. A second part of the project was to document this dissemination of the project. At the beginning of the project only a few people were asked to participate and to circulate the project to the people they feel related to - internally and externally. Recording by whom a participant has been informed a map of relations grew continuously and gave a dynamic image to the social networks behind the faces as well. Above all the growing network visualized how interrelated a scientist is. The evolution of the network was visualized in the exhibition as touch screen presentation, but also could be accessed online using SemaSpace as visualisation tool.

Curator: Jochen Hennig
www.facingscience.net

*facing science in the WeltWissen exhibition>
Martin-Gropius-Bau, Berlin 2010*





*From the Distant Past
laser projection at the Maryland Science Center
Baltimore 2011*

From the Distant Past

The bright green light waves pulsing in autumn 2010 and 2011 over the architectures of the Palazzo Franchetti in Venice, the Maryland Science Center in Baltimore and the American Museum of Natural History in New York City are a minimalist representation of the most distant objects in the universe discovered by the Hubble Space Telescope. These undulations projected by green high power lasers tell a story about the oldest colours in the universe originating from some of the earliest agglomerations of stars ever recorded.

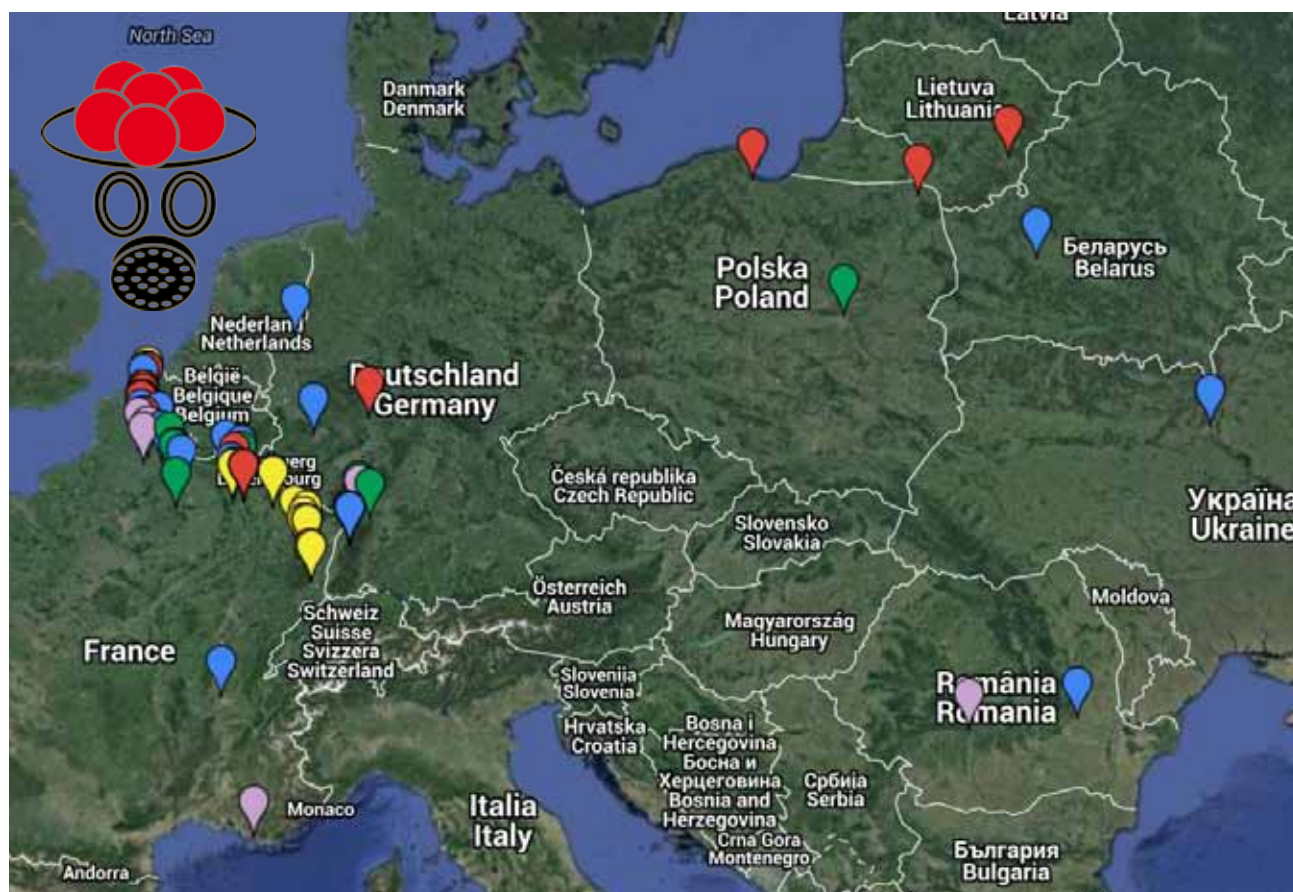
So *From the Distance Past* reveals that Hubble and other astronomical telescopes do not only produce the familiar and spectacularly 'pretty' pictures of the sky. The astronomer's heart is often made to beat faster by the analysis of the light of the most distant objects in the universe by the use of 'spectroscopy': the splitting of light into its constituent colours by a prism or a diffraction grating. The light emitted by stars, be they as close as our own Sun or as distant as the youth of the universe, carries the imprint of the chemical composition, the evolutionary state, and the mass of the shining star or stars. By its luminous animation on the public facades, this faint colour echo of the primordial universe appears less as an abstract idea than as an anthropomorphic association with a heartbeat or a brain wave. This work makes a powerful connection between the long tradition of painting and with colour seen in a conceptually new way.

Coordinated with the projection of the spectra in Venice, the image of the corresponding star, galaxy or quasar was projected also onto the lawn in the Franchetti garden. The images are projected by a special process emphasizing the very nature of the images captured with just a few hundred pixels. Never seen in public before, these observations represent the very limits of our knowledge of the distant Universe today. Due to the fact that these pixel constitute the end of resolution and that only the faint light consisting of a couple of photons may result in a spectral peak, *From the Distant Past* is not only a light trip back to the origins of the universe but also a walk at the borders of contemporary vision in general.

www.imagination.net/distantpast

*projection on the sphere of the Hayden Planetarium
at the American Museum of Natural History
New York City 2011>
credit: TOR, AMNH*





On the project page www.memento190.de an interactive Google map indicates the known places of death sorted by the year with the help of colour signs.

memento 190

In summer 2014 a memorial in the Black Forest town Oppenau commemorating the soldiers killed during World War I was demolished to construct a parking. So in the year of the centennial of World War I there was no venue where to commemorate all the 190 killed persons from the city and its surrounding villages. This circumstances motivated the artist Tim Otto Roth to initiate a temporary memorial in his Black Forest hometown.

Until the re-erection of the memorial in summer 2015 a LED based ticker was displaying all the names of the war deads. These are 190 names in total, some of them, like for instance Ludwig Huber, sound very familiar in that region. The idea with the luminescent ticker provokes at first hand associations with the works by Jenny Holzer, but it has a close site-specific reference. The LED display is mounted in one of the skylights of the artist's studio, which faces the platform of the local train station. There LED tickers display the recent train traffic information. This visual play with familiar displays comprises not only an element of irritation, there is also a reference to the station as location, where a lot of soldiers said a final good-bye to their families.

*in cooperation with: Willi Keller & Miriam Seidler
www.memento190.de*

*a temporary World War I memorial
at a Black Forest train station in 2014>*



MEMENTO 190

MEMENTO 190



MEMENTO 190



*Heaven's Carousel @ GLOBALE
Friedrichsplatz, Karlsruhe
summer 2015*

Heaven's Carousel

With a relatively simple setting the *Heaven's Carousel* is beaming the ancient music of the spheres into the modern age of astrophysics, which is confronted not with static celestial spheres but with an accelerated expanding universe. For the 4th Hubble Space Telescope Conference, which took place in March 2014 at the renown Accademia dei Lincei in Rome Tim Otto Roth designed for the academy's palm garden an ethereal carousel construction with 36 loudspeakers mounted on strings and turning around the heads of the visitors with a span of up to 16 meters. As the sound waves are compressed or expanded when the circulating loudspeakers approach or depart the pitches of the played sine waves change up or down depending on the relative velocity of the speaker. This so called Doppler Effect depends of the listener's position, so the visitors are invited to move under the installation. The *Heaven's Carousel* premiered in the United States in April 2015 in occasion of the 25th anniversary celebration of Hubble Space Telescope at the American Visionary Art Museum in Baltimore. In Germany it is presented for the first time in summer 2015 in front of the State Museum of Natural History Karlsruhe in the context of the Globale curated by ZKM Karlsruhe.

This incredible dynamic sculpture created by Tim Otto Roth channels some of these feelings about the accelerating universe. Important themes that are related to that discovery are echoed in the piece: blueshifts and redshifts, isotropy and homogeneity, our inability to see the strings directing the action, the struggle to perceive depth in the universe are just a few ... (Adam Riess)

Curator (Globale): Peter Weibel, Andreas Beitin
www.imagination.net/carousel

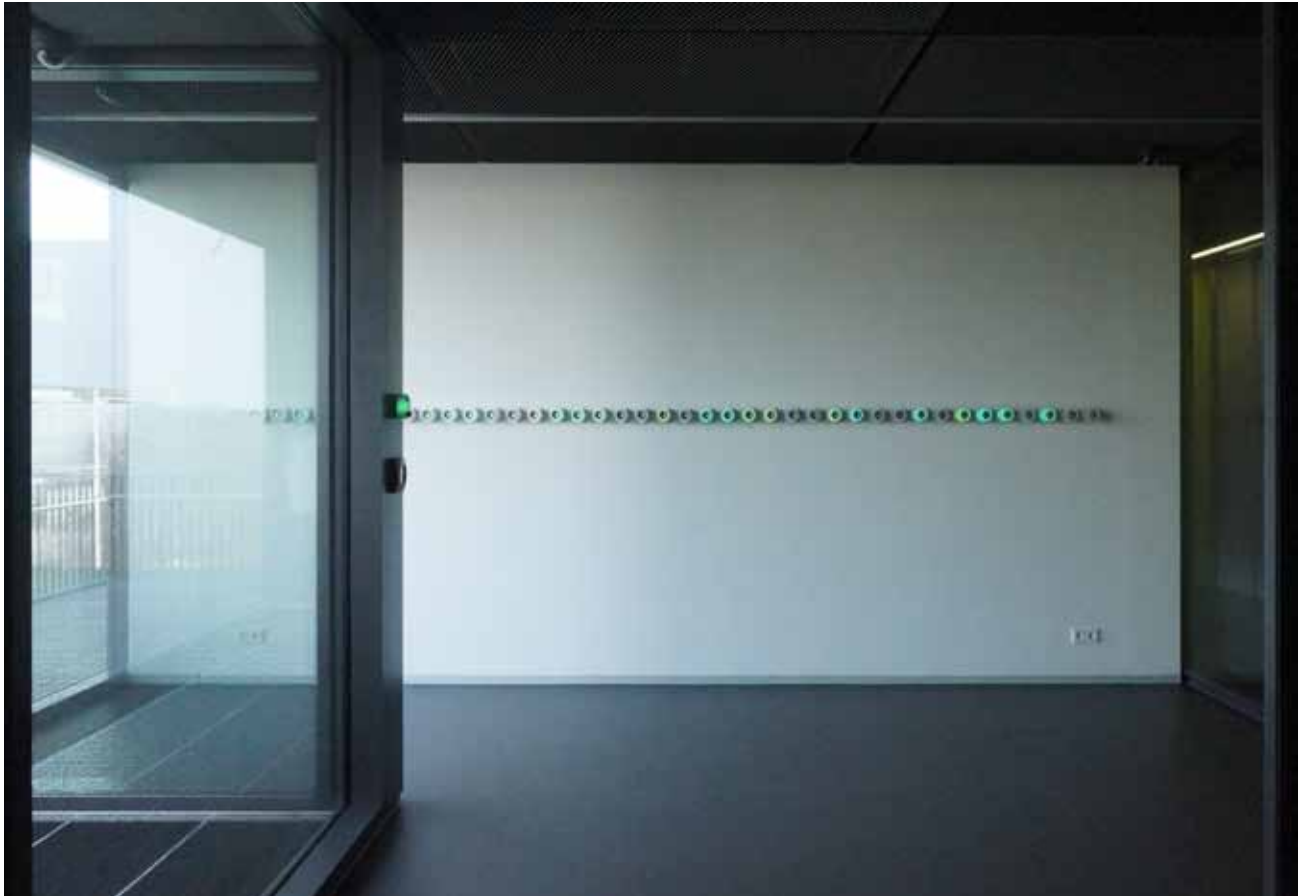
*suspended carousel framing the moon on the night sky
Accademia dei Lincei, Rome 2014 >*







*Premiere of the Heaven's Carousel
Accademia dei Lincei, Rome 2014*



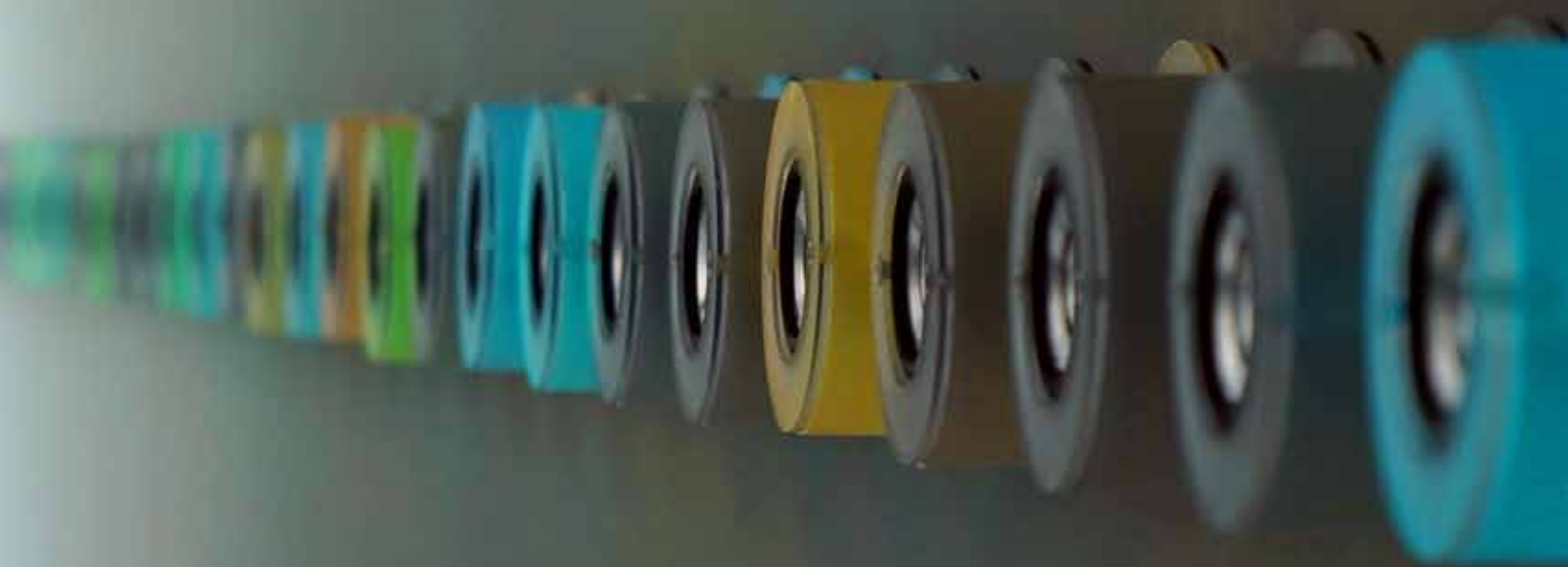
aura calculata

aura calculata
Lehmann-Zentrum, TU Dresden
permanent, since spring 2015

Aura calculata is a permanent sound installation for the lobby of the super computing centre of the Lehmann-Zentrum of TU Dresden. The 39 loudspeaker sculptures designed by Tim Otto Roth represent an elementary calculation process. The illumination of a sound pixel or playing a sound is based on the principle of a simple addition, similar to a human wave in a stadium. The activity of each sound pixel is a reaction to the activity of its immediate neighbours. Four different neighbourhood rules can be selected for the pulsing control sending an accelerating or decelerating meter. Given a chosen rule, exactly one neighbour being active means that the sum of all active neighbours equals one. Thus, the sound pixel plays a sound and lights up on its own in the next step. A sound pixel that has predominantly been active or off during the recent steps changes its colour and slightly its pitch upwards or downwards according to a metric scale. A continuously changing self-organizing sound tapestry is woven in the absence of a central directing instance.

www.pixelsex.org/aura

detail with the illuminated loudspeaker sculptures >





sterea skia
anaglyphic shadow theatre on the old graduation tower
lichtsicht 5 projection biennial, Bad Rothenfelde (D)
6 channel video projection, 12 x 100 m
18 September 2015 - 7 February 2016

sterea skia

How would the shadows look like on earth, if our planet would not turn around a single sun, but around a double star system? To answer this question *sterea skia* simulates the light paths of a red and a blue sun shining on a model of a real world situation on earth.

For the projection biennale *lichtsicht 5* directed by Peter Weibel a section of a street in the German city of Bad Rothenfelde is modelled in a 3d program to explore the shadow casts changing over the day with the motion of the suns. These shadow casts revealing a red and blue edges are projected to the huge wall of the old graduation tower measuring 100 x 12 meters. It is a kind of shadow play using the earth surface as a kind of screen which can be watched from the bottom.

If the spectator puts on anaglyphic glasses he will make a further surprising discovery: The flat shadows turn into spatial objects! *sterea skia* extends this spatial exploration also to artificial light sources. Not only the street scene is illuminated with a duo of red and blue lamps, but also a walking person and geometrical objects. Consequently the project explore with the parallel projection in the solar light and the central projection with artificial light two very different spatial concepts.

Curator: *Peter Weibel*
www.imagination.net/stereaskia

reflections in the basin of the graduation tower >





LITTLE BANG THEORY
two high power RGB lasers, two mirror hemispheres
Blautopf Ditzingen
9 September 2016

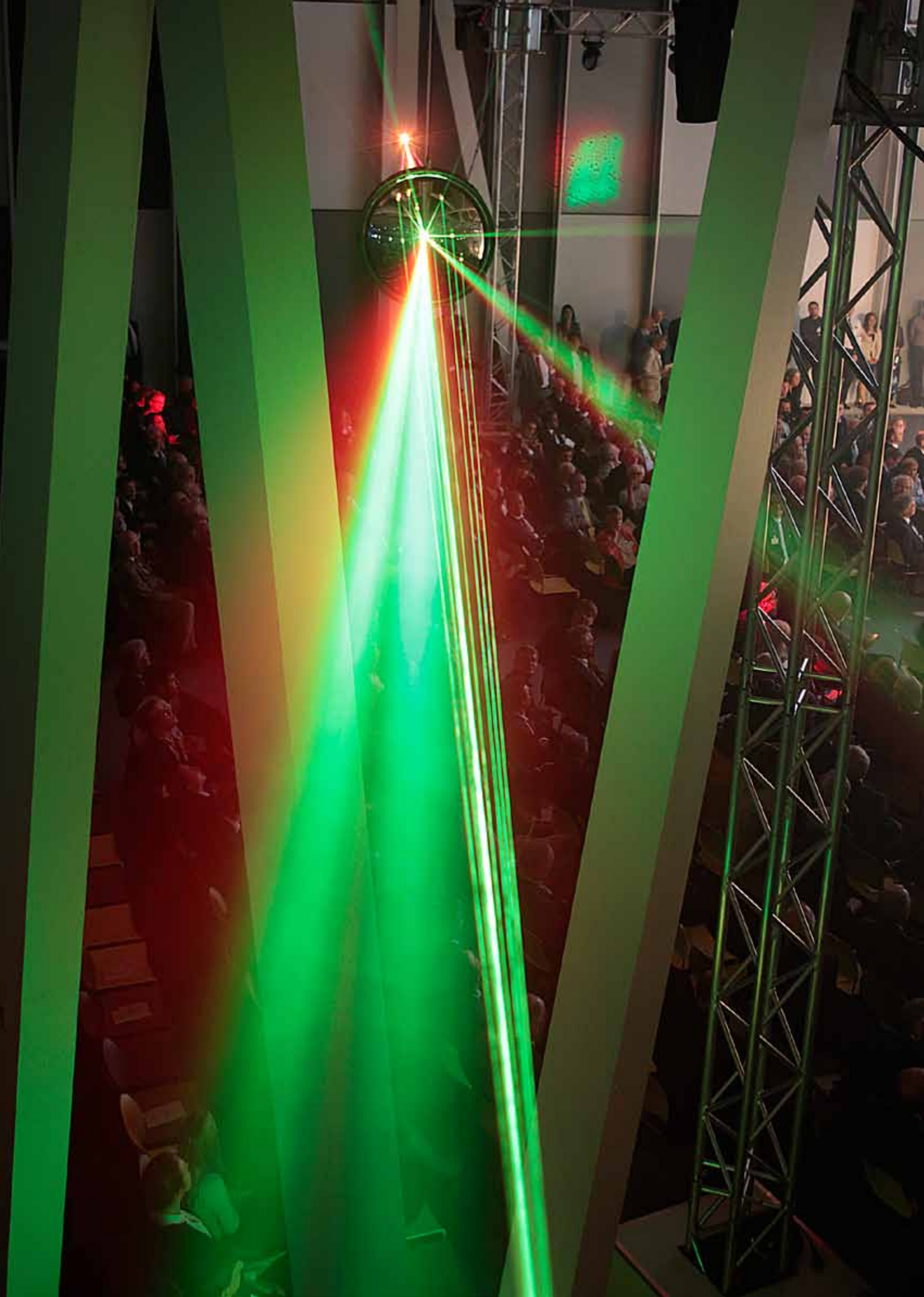
LITTLE BANG THEORY or ZERO con CERN

LITTLE BANG THEORY brings literally the European Organization for Nuclear Research CERN in Geneva to ZERO. As a reminiscence to the early kinetic light experimentations of the ZERO artist group the project connects a purist play with light and its reflections with the heart of today high energy physics. Emerged in a subtle haze two convex mirrors hang back-to-back around 3 meters high in the darkened “Blautopf” hall of the TRUMPF company in Ditzingen. Two lasers are aligned perpendicularly to the mirrors, so their light beams are reflected in different colours, intensities and directions into the whole space resulting in a varying appearance: from a concentrated bundle of rays to a star like emission of rays. Sounds like a spherical organ reminding to early science fiction movies complement the visual impression.

LITTLE BANG THEORY is the first immersive collision environment displaying in real time particle collisions from major CERN experiments. Its universal geometry allows to compare visually collision experiments from different detectors. The environment visualizes in a minimalist way collisions of particles drawing the tracks of subatomic products star like 360 degrees into the exhibition space using a combination of high power colour lasers and a sophisticated high precision mirror setting. In the end the visitor can follow a mesmerizing reflectory light play and at the same time the immersive environment gives the visitor the feeling standing in the middle of particle collisions echoing as a visual BANG the physical conditions of the very beginning of the universe – the Big Bang. Sound is a complementary component representing the collisions. The energies of the individual particles are translated into sine waves of corresponding pitches mixing up by additive synthesis to complex sounds. The resulting sound compositions allow to get an idea of the energetic composition of an event. The flight paths are represented by placing the sounds correspondingly in the space of the multi channel system.

LITTLE BANG THEORY is funded by the Berthold Leibinger Stiftung.
www.imagination.net/littlebang

premiere in occasion of the ceremony of
The Berthold Leibinger Zukunftspreis and Innovationspreis >





*Deep Doppler
the colours of the six horn like speakers indicate
the pitch of the played sine tone
Goethe-Institut Hanoi, Vietnam
12 October - 3 November 2017*

Circulating Sounds – Deep Doppler meets mathematical socialism

The installations *aura calculata* and *Deep Doppler*, pending from the ceiling above the visitor, describe both a circular motion but in different ways. In *aura calculata*, sine tones circulate in a ring of 23 illuminated „sound pixels“. The activity and the pitch of the tones are the result of a simple self-organization principle: Each loudspeaker obeys the same rules on how to react to its neighbor's activity – the same principle driving the „wave“ in a stadium. So the driving force behind this system is a kind of mathematical socialism equalizing all sound pixels. By varying the neighbor rules, the interaction interestingly can produce various spatio-temporal patterns, be it an oscillation, regular patterns or simply chaotic noise. During years of extended simulations, Roth explored the behavior of these minimalistic systems and discovered that over time some pixels are more active and others less. These tendencies are finally translated into variations in the color and the pitch of the sound pixels, weaving a continuously changing sound carpet. Here Tim Otto Roth explores new harmonics, playing with microtonal scales such as 31-tone or 53-tone scales developed by Huygens or Mercator hundreds of years ago.

Deep Doppler circulates more physically. It consists of six translucent tubes of different lengths fixed to a hexagonal body circulating slowly above the heads of the audience. This horn-like construction permits the playing of saturated deep tones, which change their pitches slightly due to their relative motion – also described as the so-called Doppler effect. By rotation and by switching tones on and off, which can be followed by illumination, a rotating sound field is created traveling through the space and also the listener like a vibrating sound field, which might be followed by moments of local extinction of the sound.

<http://www.imagination.net/exhibits/hanoi>

*impression from the exhibit Circulating Sounds
at Goethe-Institut Hanoi >*



Tim Otto Roth

17.05.1974 Oppenau i. Schw./Germany



1994-1995	studies of philosophy and politics at Universität Tübingen
1995-2001	studies of the arts at Kunsthochschule Kassel, diploma in arts, „Meisterschüler“
Autumn 2004	diploma in theory of visual communication, Kunsthochschule KS
2008-2014	doctorate at Academy of Media Arts (KHM), Cologne

single shows (selection)

November 2000	opening ballet-photo-grammatique, Ufa-Palast Kassel
June 2002	100 Days - 100 Imachinations, Kassel/ Walter Storms Galerie, Munich
September 2003	start of the Imachinations in Spitzbergen (NO) und Magdeburg
October 2003	barroco, German Gem and Diamond Bourse, Idar-Oberstein
November 2003	I see, what I see not, Kunstfassade München (cooperation Lenbachhaus)
November 2004	Imachinations at ZKM Karlsruhe and at Schloß Dagstuhl
November 2004	I see, what I see not, München
January 2005	100 Days - 100 Imachinations at the „Top of Europe“ Jungfrauoch/ CH
August 2005	100 Days - 100 Imachinations at the Bibliotheca Alexandrina/ Egypt
September 2005	Pixelsex at KPN Tower Rotterdam/ NL
March 2009	Cosmic Revelation, KIT Karlsruhe
September 2010	From The Distant Past, Palazzo Franchetti, Venice/ I
September 2011	From The Distant Past, American Museum of Natural History, NYC/ US
August 2014	memento 190, Bahnhof Oppenau i. Schw.
Spring 2016	XX oder der ‚Mummelsee in der Pfanne‘, Städtische Galerie Offenburg (Kat.)
Autumn 2016	Light from the Other Side, Goethe-Institut Washington/ US
October 2017	Deep Doppler meets mathematical socialism, Goethe-Institut, Hanoi/ VNM

group shows (selection)

April 2002	Leuchtpur, MMK Frankfurt (Kat.)
October 2002	Fotografie als Experiment, Kunsthalle Erfurt (Kat.)
March 2004	LUX.US, Städt. Galerie, Lüdenscheid
November 2005	konkrete Fotografie, Museum im Kulturspeicher, Würzburg
November 2005	Lichtkunst aus Kunstlicht, ZKM Karlsruhe (Kat.)

March 2008	Genau & Anders, MUMOK, Vienna
May 2009	Konkrete Farbfotoarbeiten, Verein für aktuelle Kunst, Oberhausen
September 2009	Cyberarts 09 - Prix Ars Electronica Exhibition, OK Center, Linz (Kat.)
October 2009	color continuo 1810...2010, Altana Galerie, Dresden (Kat.)
September 2010	WeltWissen, Martin-Gropius-Bau, Berlin (Kat.)
November 2010	Iris, Städtische Museen Wetzlar (Kat.)
July 2011	Photographs 1858 – 2011, Galerie Remixx, Graz/ A
January 2015	Weitblick, Stadthaus Ulm
Autumn 2015	Lichtsicht 5, Bad Rothenfelde
Autumn 2016	Light Art Festival ‚Aufstiege‘, Stuttgart

music performances & concerts (selection)

March 1997	Die blaue Mitte, St. Johannes, Oppenau
March 1999	Die blaue Mitte, Christuskirche, Musikfreunde Donaueschingen
Autumn 2008	Music of Life, Festspielhaus Hellerau & Deutsches Hygienemuseum, Dresden
July 2011	Music of Life, ZKM Karlsruhe
November 2012	Sonapticon, ZKM Karlsruhe
March 2014	Heaven's Carousel, HST IV conference, Accademia dei Lincei, Rome/ I
April 2015	Heaven's Carousel, AVAM, Baltimore/US
May 2015	inauguration of aura calculata, Lehmann-Zentrum, TU Dresden
Summer 2015	Heaven's Carousel, Globale, Karlsruhe
September 2016	Little Bang Theory, Berthold Leibinger Stiftung, Ditzingen bei Stuttgart
June 2018	SMART>SOS, IRCAM, Paris/FR

awards, fellowships (selection)

2002	2. Award „Digitale Bildwelten“, Kreissparkasse Recklinghausen
2004	first German Light Art Award „LUX.US“, Lüdenscheid
October 2004	stay as first artist at the Paranal Observatory/ ESO, Chile
2004	International Media Art Award of ZKM & SWR, Karlsruhe/Baden-Baden
2006	research fellowship, ZKM Karlsruhe
2007	residency at the High Performance Computing Centre (ZIH), TU Dresden
2009	Honorary Mention, Ars Electronica, Linz
Autumn 2009	guest artist at ESO (Headquarter Garching/D) and CERN/CH
2012	guest composer at Institute for Music and Acoustics, ZKM Karlsruhe
2014	Honorary Mention, VIDA, Madrid
2017	VERTIGO STARTS Residency in cooperation with the research group Bio4Comp (Sweden/Germany/GB)

collections

Daimler Art Collection, Stuttgart; ZKM Karlsruhe; Sammlung Margotow, Kassel



*Heaven's Carousel @ Globale
Natural History Museum, Karlsruhe 2015*



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