

SpaceTime Helix is a kinetic light sculpture, showing the passage of time, endlessly into the future. It is a play with light, helical symmetries, geometry and infinity.

SpaceTime Helix is a spinning standing wave in a white rubber string, forming a large helicoid up to the roof. The installation creates a superposition of harmonic oscillations in a string. The helix surface is bright transparent, with waves running over it. The helicoid surface is suited for many types of projections.

SpaceTime Helix can also be played as an optic/acoustic instrument creating an immersive experience of space, light and sounds, which is magic and non-recordable. The helix has a wearable interface to change the frequency and brightness of the lights and the speed of the motor (using an Arduino circuit). The circuit was open-source developed together with the hackerspace ToLabaki and with technicians at the Tinkerlab at Schmiede.

S P A C E ≡  
T I M E ≡  
H E L I X

@max planck institute  
of astrophysics

october 19, 2013 munich



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# S P A C E T I M E H E L I X

## VISION

permanent installation  
@max planck institute  
of astrophysics



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**S p a c e T i m e H e l i x** is a rotating standing wave. In modern physics, like string theory and quantum mechanics standing waves are fundamental. In quantum mechanics the energy levels of a particle are standing quantum mechanical waves. In string theory the particles themselves are strings in many space-time dimensions and the different types of particles are the different standing waves.

Helices made of electrical wire, transform electric energy in magnetic energy, which is used in dynamo's, electric motors and transformers. Tesla, famously, used coils to generate high voltage current and high frequency electricity in experiments with electrostatic charges, x-rays, lighting sparks and wireless transmission of electrical energy among other things. In mathematics helicoids are the third type of minimal surface (a zero-curvature surface). Multiple parallels with scientific phenomena.

The installation is interactive for people who want to experiment and play this opto-acoustic instrument.

**U n t o u c h e d** the helix interacts with the surroundings, light, temperature, sound, etc. the sculpture blends into the background - sometimes the helix spins into action, but not for more than 10 minutes at a quiet pace.

The helix is not only an installation but also **o p e n s o u r c e a r t**. The circuit an open source, open hardware project, based on the open-hardware platform "Arduino". The circuit is a controller for experimenting audience, but also a sensor for when there is nobody playing. The open source project has also a simple helix made from easy-to-find materials. (a led flashlight, a small motor, a simple frame). It invites others to send their projects of smaller or larger helices.

### CONTROL THE HELIX



a handheld remote control from any browser or smartphone.



### TOUCH THE HELIX



a manual and tips for how to play the helix and what **not** to do.

**EXPERIMENT** making shapes, sounds and effects, with your bare hands. The audience walking up the stairs which connect extraterrestrial physics and astrophysics.

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