

## **KKH : NEUROPLASTIQUE/SOUNDSCAPES**

**EXPERIMENTAL MULTICHANNEL SOUND WORKSHOP - Royal Institute of Art (KKH)  
Stockholm, Sweden. 2016**

**Visiting Professor: Stephen Schaum (US)**

## CLASS DESCRIPTION

This workshop is a ten class exploration of digital sound recording, production, composition and spatialization techniques using Audacity, Max/MSP, Protools, and Reaper. Throughout the workshop we will also construct our own homemade contact mics, pre amps, binaural mics, op amps, Cornu spiral speakers, and become familiar with standard field recording hardware such as the Edirol r-44 and Zoom H4n and H5.

Focussing on multi-channel/spatialized sound environments and performance, we will investigate and experiment with the visceral neurophysiology behind sonic and spatial perception, aleatoric composition techniques, field recording, microtonal synthesis, basic psychoacoustics, and listen to some significant experimental sonic compositions of the 20th century as we compose our own. Most of all we will explore the power of sound to influence our state of mind, body and sense of space. Field trips to local sound studios and venues such as Elektronmusikstudion (EMS), Fylkingen, and Audiorama will be spaced throughout our time together, and a live public performance at the end of the workshop will be held on the evening of the last class at Audiorama, next to the Moderna Museet, using their 21 channel sound environment.

This workshop is an extension of previous workshops/studios held at Harvard University's Graduate School of Design, La Mama/Culturehub (NYC), and Seoul Institute of the Arts (Seoul, South Korea).

Stephen Schaum is an artist and researcher based in Brooklyn, NY working within the fields of sonic composition, installation, sculpture and neuroaesthetics. Recent exhibitions and performances include Harvard University, HOLO (NY, US), Knockdown Center (NY, US), Fridman Gallery (NY, US), Outpost (NY, US), Trans-Pecos(NY, US) Vanderbilt University, and at the Hudson Valley Center of Contemporary Art (NY, US).



### Field trips and venues visited:

<https://www.fylkingen.se/>

<http://www.audiorama.se/>

<http://elektronmusikstudion.se/>



# COURSE OUTLINE

- CLASS 1:** 10-12pm - **Introduction/Listening/Sound Walk/ Soundscapes**  
1- ~4pm - Workshop/ Introduction to studio and recording equipment  
(Assignment: Listen/Collect sounds/ Readings: Pauline Olivaros, Murray Schafer, Barry Truax, Janet Cardiff, Hildegard Westerkamp)
- CLASS 2:** 10-12pm - **Listening/ Spatialized Sound/ Creating a Multichannel Sound Space at KKH**  
1- ~4pm - Workshop/ Audacity/ Reaper, Protools, Max/MSP  
(Assignment: Listen/Collect sounds/Clean up recordings/ Readings: Cage, Stockhausen, Luigi Russolo, Pierre Schaeffer)
- CLASS 3:** 10-12pm - **Listening/ Musique Concrete, Cage, Xenakis and Indeterminacy**  
1- ~5pm - Workshop/ Building Binaural Mics and Contact Mics  
(Assignment: Collect more sounds/ edit sounds files/ Readings: Stockhausen, Cage, Curtis Roads, Christoph Cox)
- CLASS 4:** 10-12pm - **Listening/ Stockhausen, Varese, Space and Time and Microsound**  
1- ~4pm - Workshop/ better Contact Mics with Preamps  
(Assignment: Collect more sounds/ Edit/ create stereo and mono compositions/ Readings: Helmholtz, Gerald Edelman, JJ Gibson)
- CLASS 5:** 10-12pm - **Listening/ Neuroaesthetics, Psychoacoustics, The Body and Entrainment**  
1- ~4pm - Workshop/ Preamps/Amplifiers  
(Assignment: Listen to previous class music selections / work on 4 channel arrangements/ Readings: Lamonte Young, Reich, Conrad )
- CLASS 6:** 8:30-12pm - **Visit Elektronmusikstudion (EMS) and Fylkingen**  
1- ~4pm - Workshop/ Amplifiers/Speakers  
(Assignment: Rhythms/ 8 channel spatialization techniques in Reaper)
- CLASS 7:** 10-12pm - **Listening/ Minimalism, Drone, Time and the Timeless**  
1- ~4pm - Workshop/ Amplifiers/Speakers  
(Assignment: Spatialized/ 8 channel compositions)
- CLASS 8:** **Visit Auditorium and discuss multichannel system set up and performance techniques**  
(Assignment: Work on 8 channel compositions)
- CLASS 9:** **Preview multichannel works in process and fine tune spatializations**  
(Assignment: Work on 8 channel compositions)
- CLASS 10:** Friday: 6pm - **Performances at AUDIORAMA, 9pm.**

## Resources:

<http://www.freesound.org/>  
<http://www.otherminds.org/shtml/Sounds.shtml>  
<http://www.ubu.com/sound/>  
<http://www.audacityteam.org/download/>  
<https://cycling74.com/products/max/>  
<https://www.reaper.fm/>  
<http://www.avid.com/pro-tools-first>

OFFICE HOURS: Tuesday and Thursday 10-2pm



## BIBLIOGRAPHY

- Cox, Christoph, 1965-, and Daniel Warner 1954-. **Audio Culture : Readings in Modern Music.** New York: Continuum, 2004. Print.
- Oliveros, Pauline. **Deep Listening: A Composer's Sound Practice.** Published by iUniverse, US. (2005).
- Cage, John. **Silence; Lectures and Writings.** Cambridge Mass.,: The M.I.T. Press, 1966. Print.
- Cage, John. **Empty Words : Writings '73-'78.** 1st ed. Middletown, Conn.: Wesleyan University Press, 1979. Print.
- Cott, Jonathan, and Karlheinz Stockhausen 1928-2007. **Stockhausen; Conversations with the Composer.** New York,: Simon and Schuster, 1973. Print.
- Zwicker, Eberhard, and H. (H Fastl. **Psychoacoustics : Facts and Models.** 2nd ed. 22 Vol. New York: Springer Verlag, 1998. Print.
- Delalande, François. "**Sense and Intersensoriality.**" *Leonardo* 36.4 (2003): 313-6. Print.
- First, David. "**The Music of the Sphere: An Investigation into Asymptotic Harmonics, Brainwave Entrainment and the Earth as a Giant Bell.**" *Leonardo Music Journal* 13.1 (2003): 31-7. Print.
- Kaempfer, Phra Hans Ulrich, and Sheila Pinkel. "**The Earth Music of Thamkrabok Monastery.**" *Leonardo* 37.1 (2004): 25-30. Print.
- Levitin, Daniel J. **This is Your Brain on Music : The Science of a Human Obsession.** New York: Plume, 2006. Print.
- Pratt, Hillel, et al. "**A Comparison of Auditory Evoked Potentials to Acoustic Beats and to Binaural Beats.**" *Hearing research* 262.1-2 (2010): 34-44. Print.
- Becker, Judith. "**Music and Trance.**" *Leonardo Music Journal* 4 (1994): pp. 41-51. Print.
- Corness, Greg. "**The Musical Experience through the Lens of Embodiment.**" *Leonardo Music Journal* 18.1(2008): 21-4. Print.
- Leary, Timothy Francis, 1920-. **Change Your Brain.** Berkeley, CA: Ronin, 2000. Print.
- Churchland, Patricia Smith. **Neurophilosophy : Toward a Unified Science of the Mind-Brain.** Cambridge, Mass.: MIT Press, 1986. Print.
- Sacks, Oliver W. **Musicophilia : Tales of Music and the Brain.** 1st ed. New York: Alfred A. Knopf, 2007. Print.
- Ackerman, Diane. **An Alchemy of Mind : The Marvel and Mystery of the Brain.** New York: Scribner, 2004. Print.
- Edelman, Gerald M. **Bright Air, Brilliant Fire: On The Matter Of The Mind.** New York: Basic Books,1992. Print.

Additional handouts and readings will be supplied during class.



## KKH - 8 CHANNEL ROOM/ SYSTEM SETUP



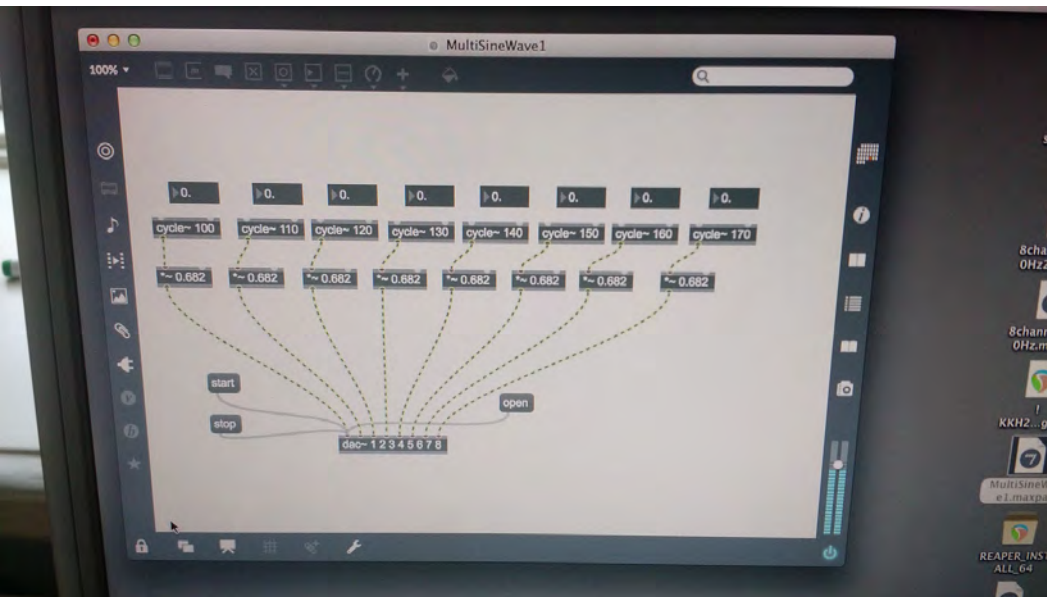
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## KKH - 8 CHANNEL ROOM/ SYSTEM SETUP





## KKH - SOUNDWALK/SOUNDSCAPES CLASS 1



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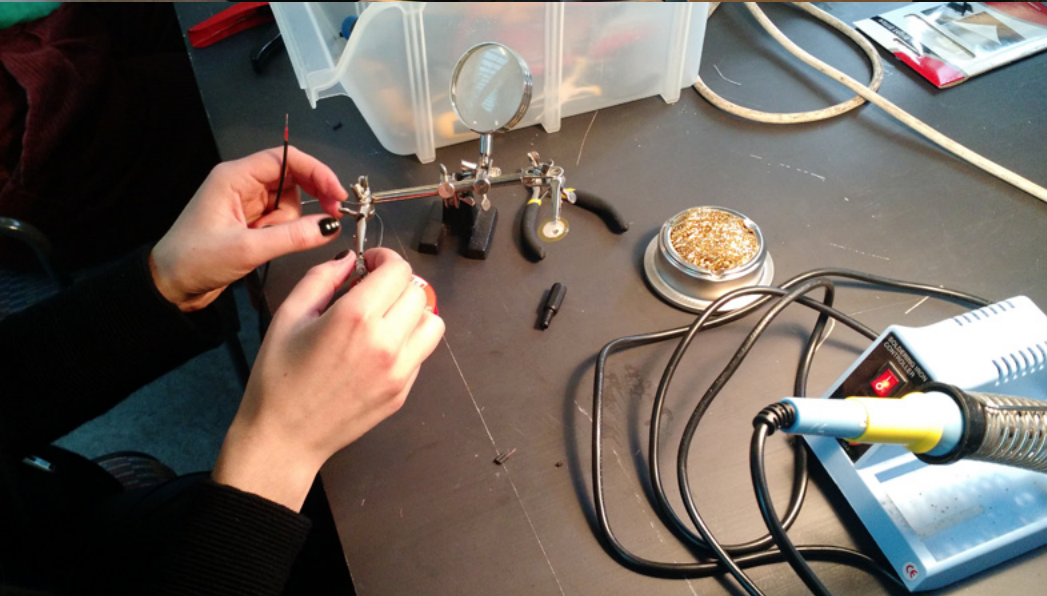
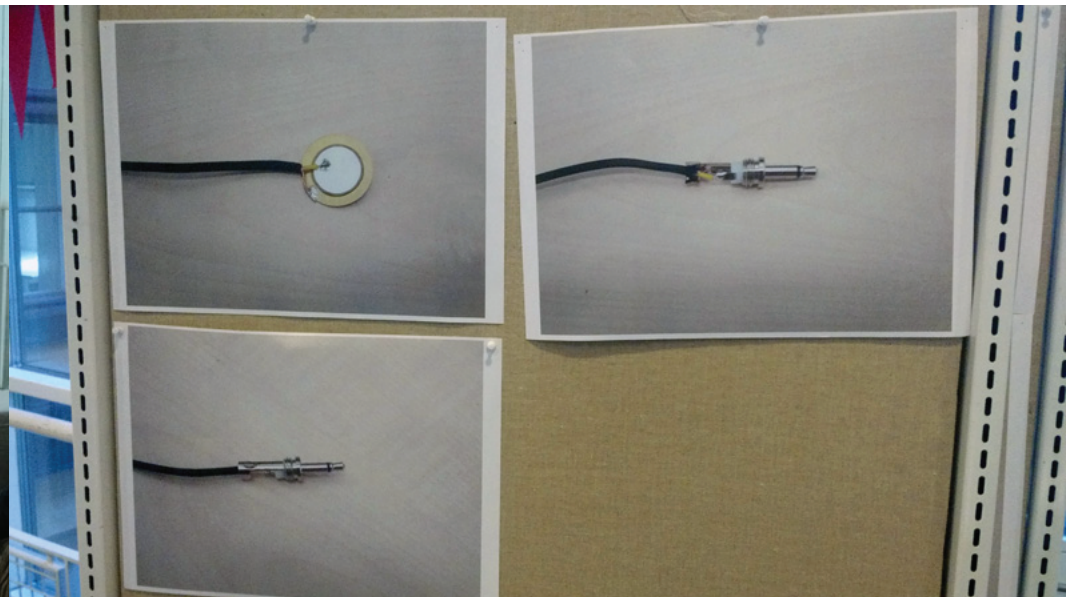




## KKH - CONTACT AND BINAURAL MICS CLASS 2 & 3



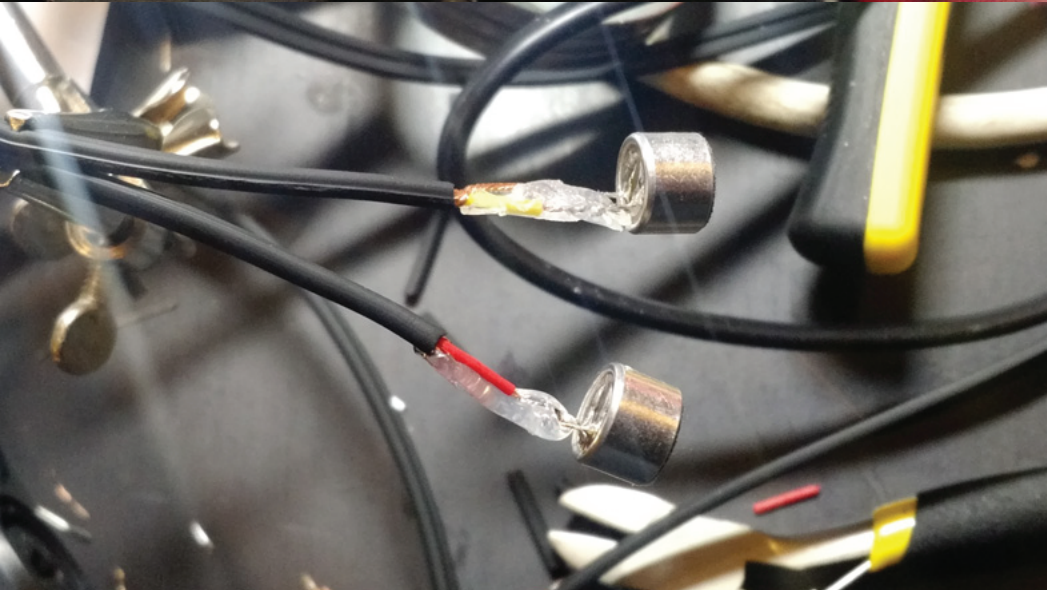
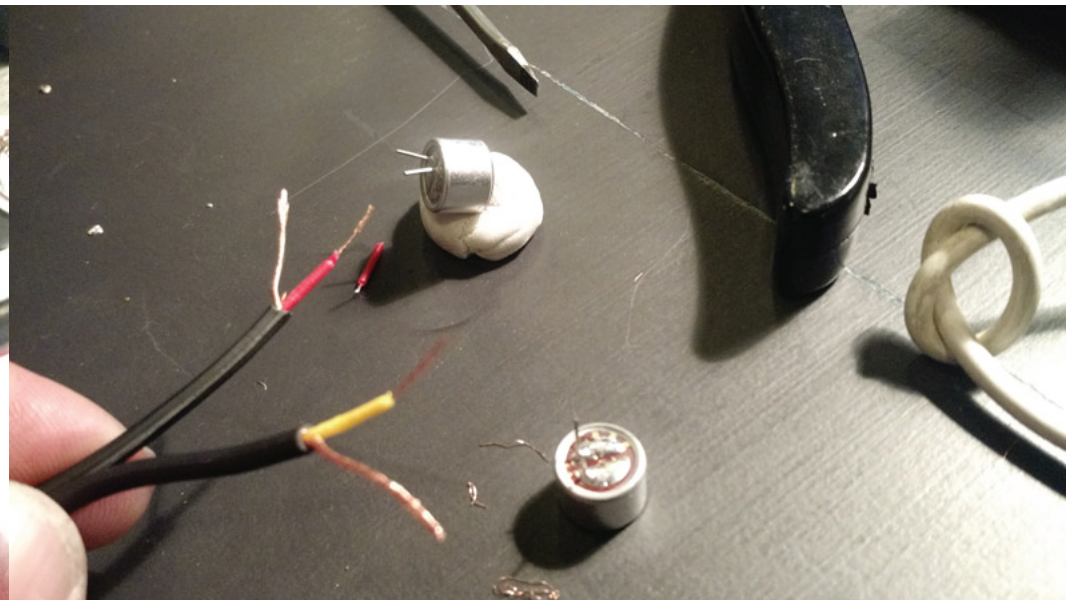
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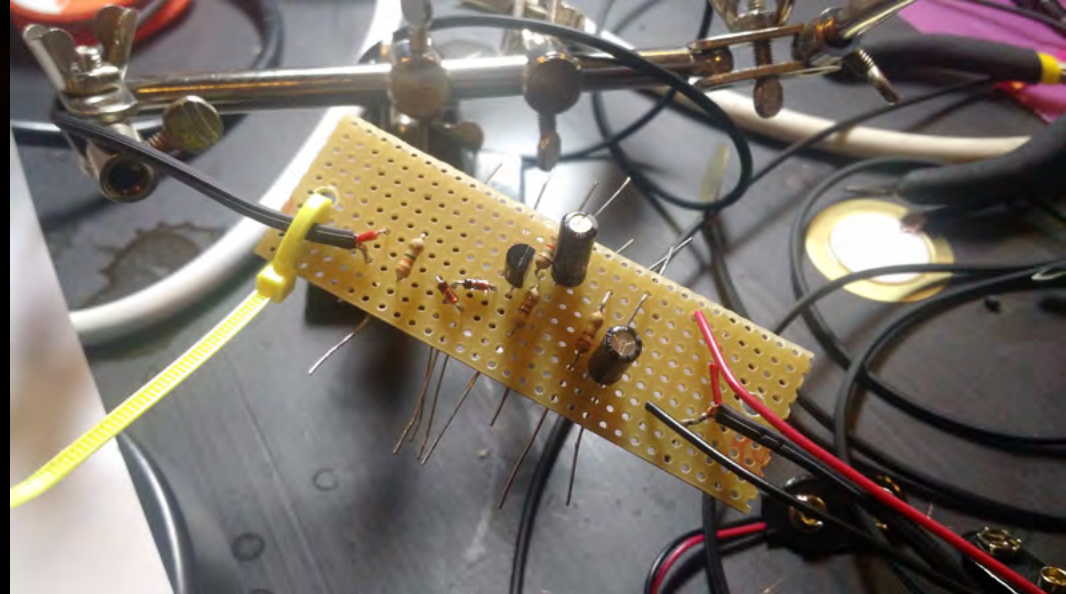
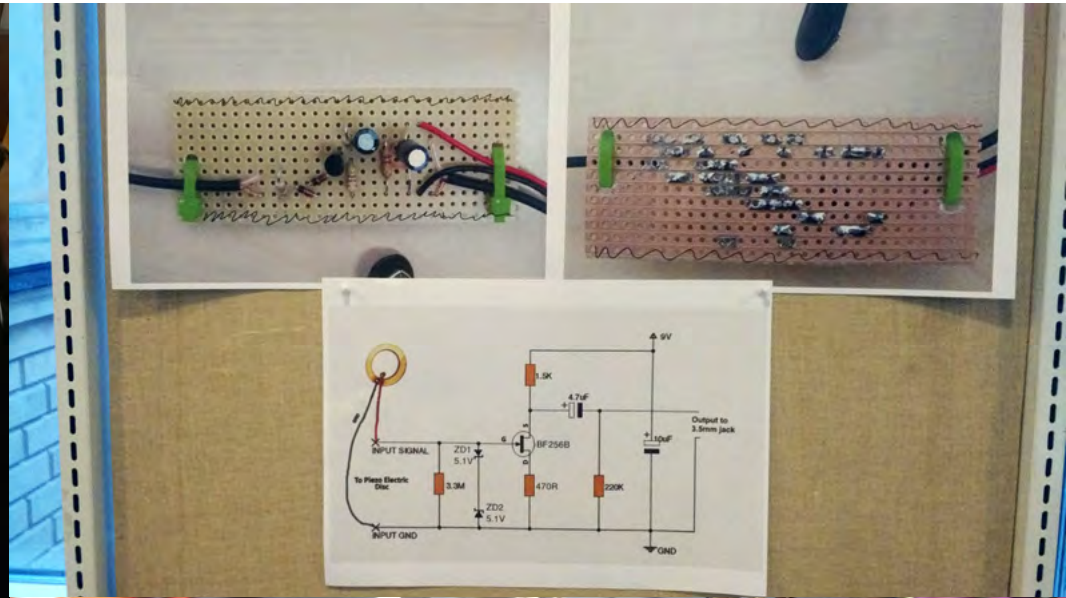




## KKH - MICS, PREAMPS AND AMPLIFIERS CLASS 4 & 5

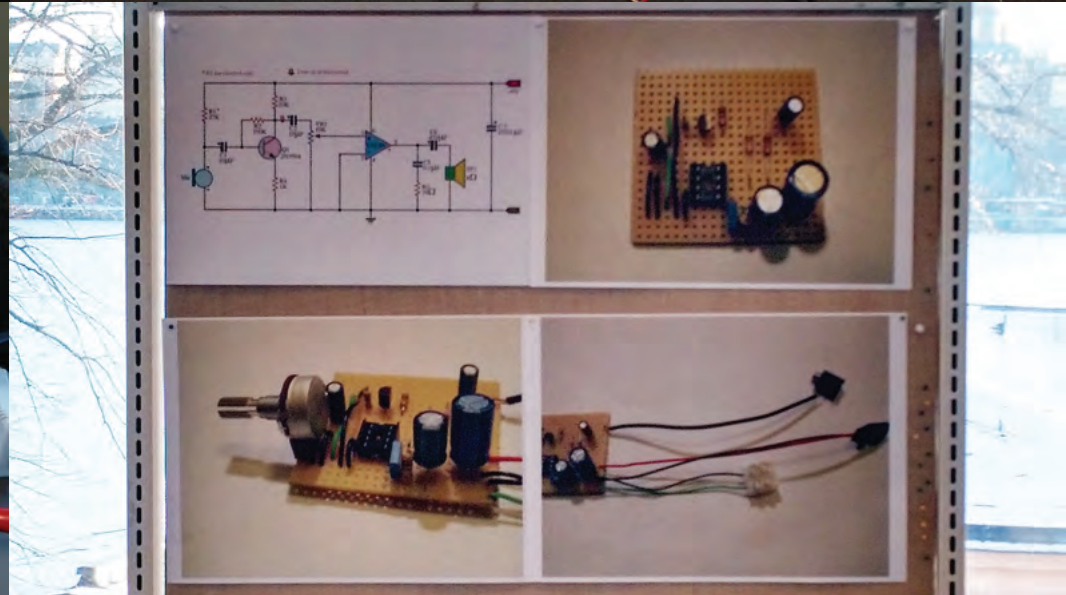
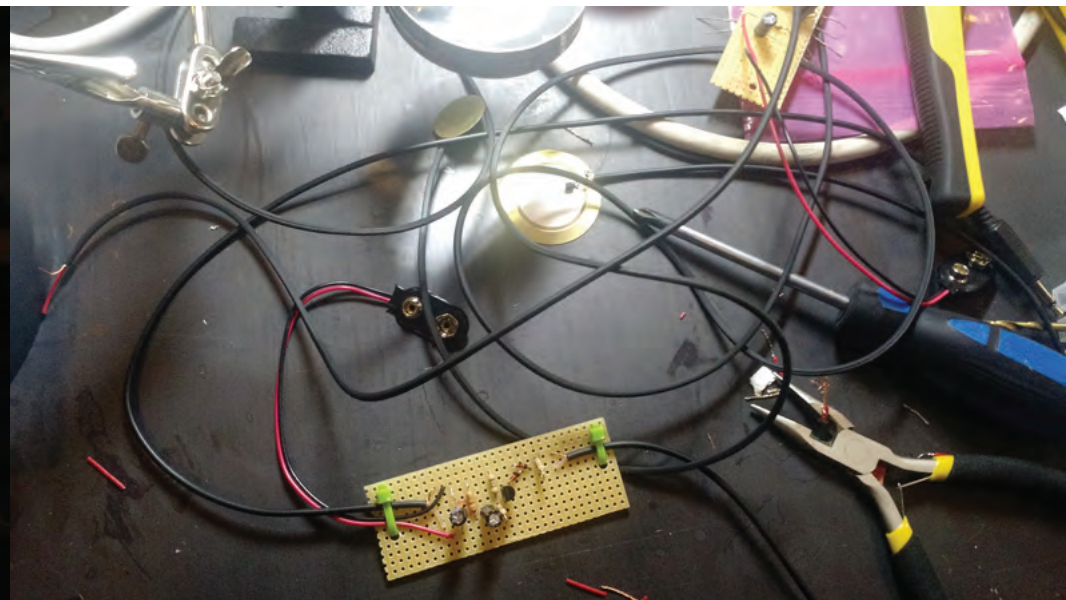
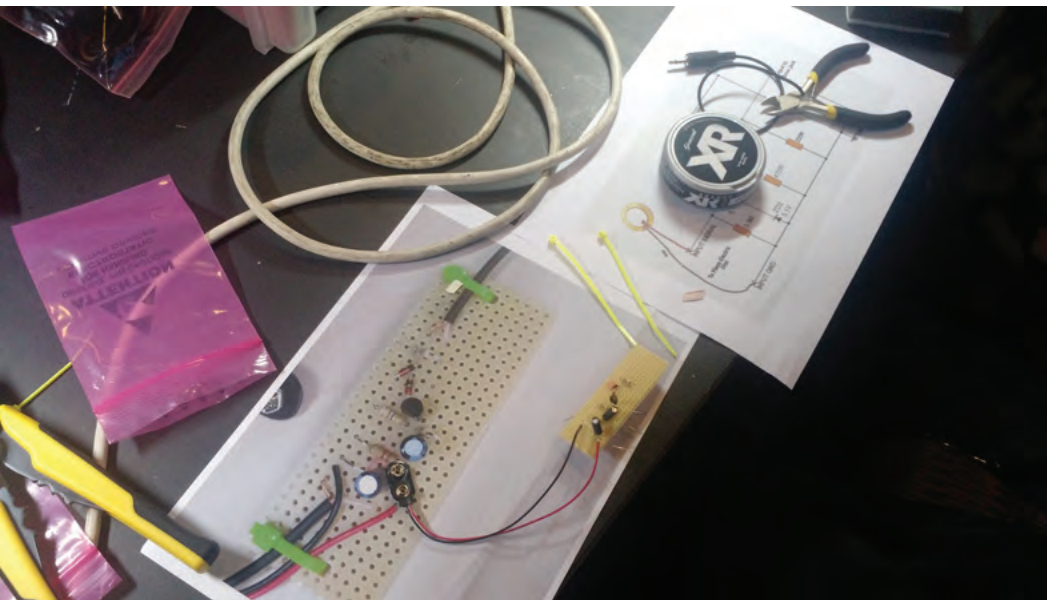


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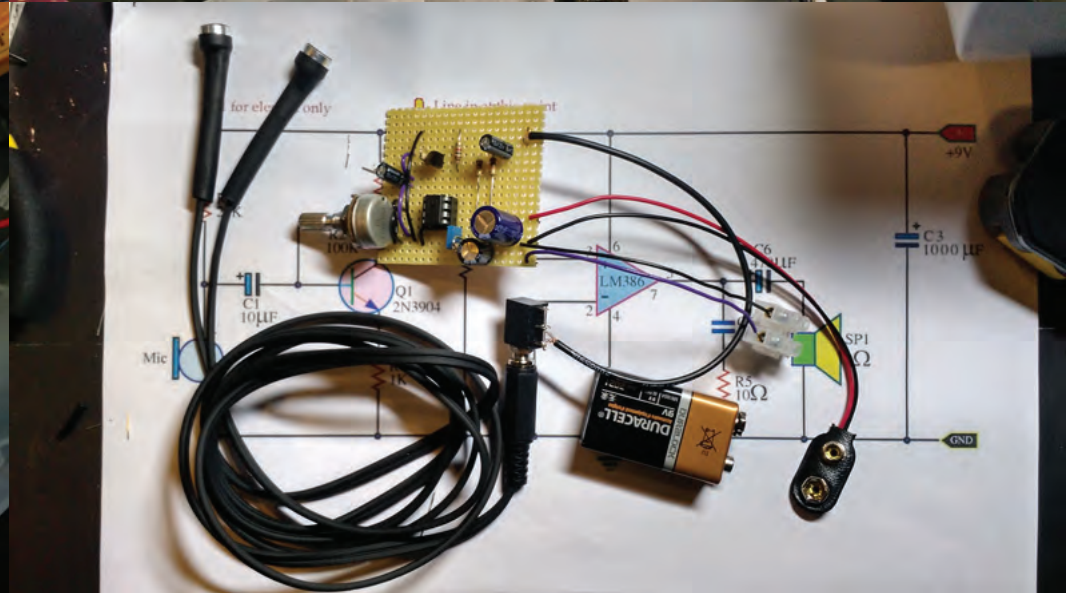
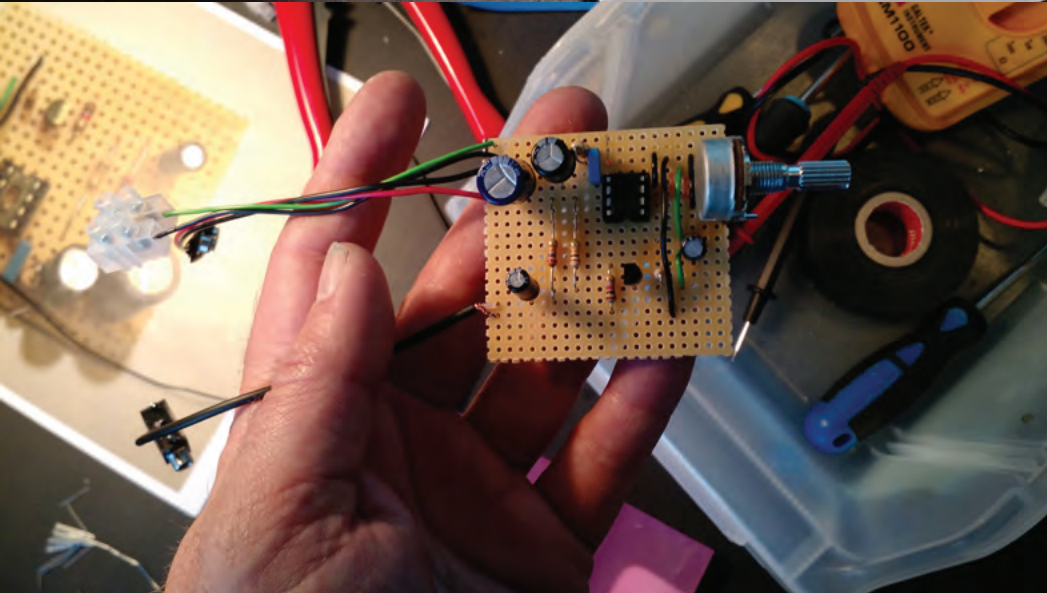
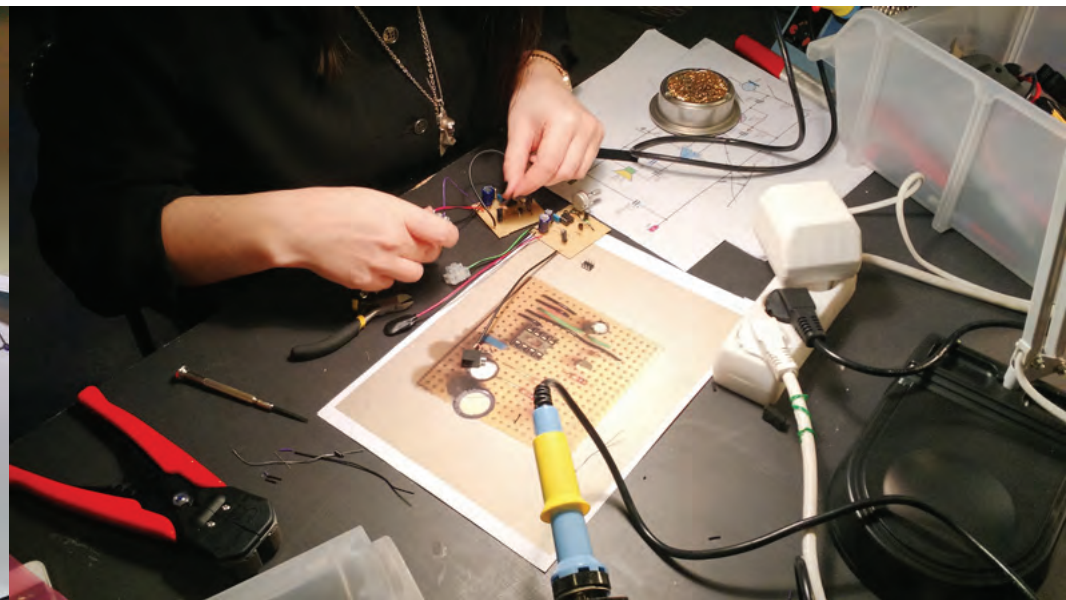
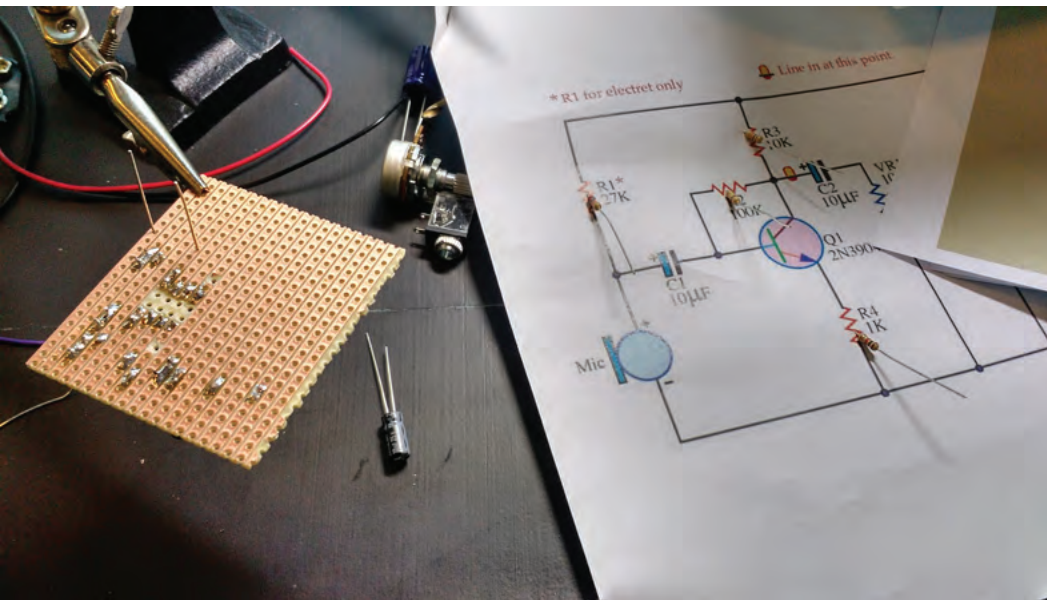
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## KKH - VISIT TO EMS AND FYLKINGEN CLASS 6



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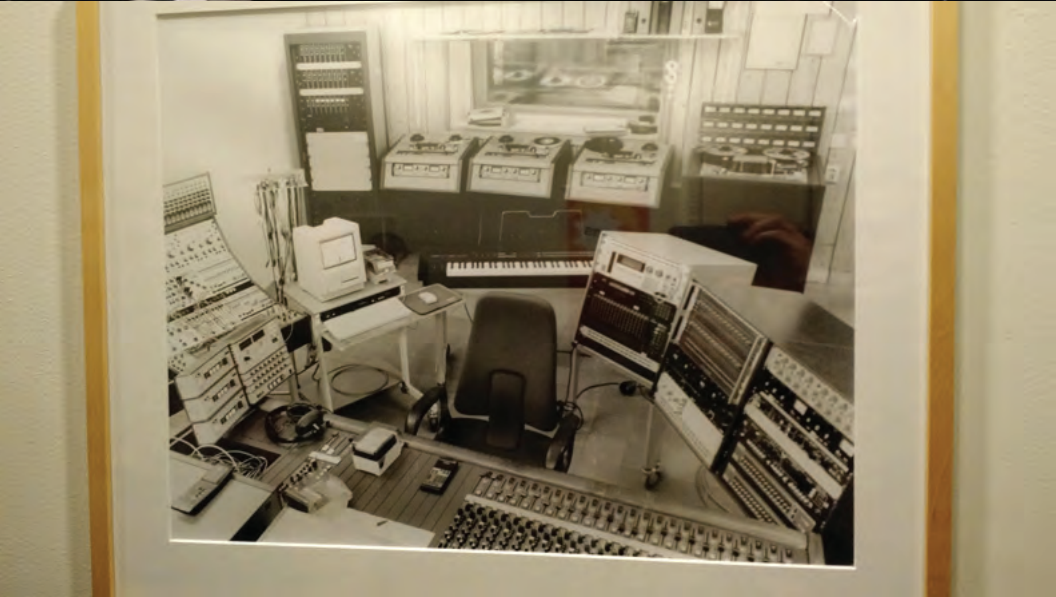




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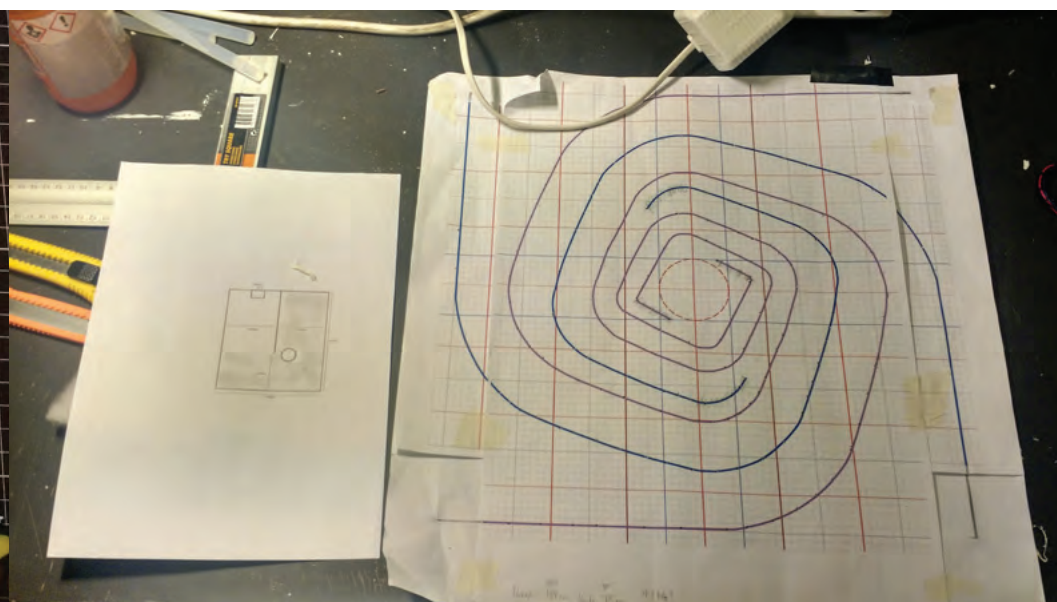


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## KKH - AMPLIFIERS AND SPEAKERS CLASS 7

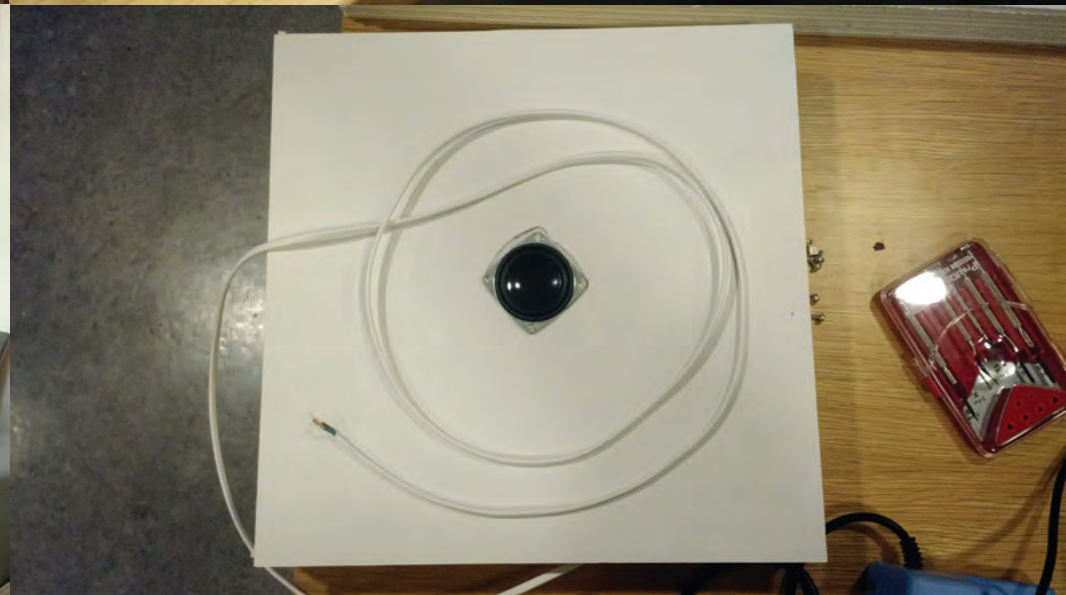




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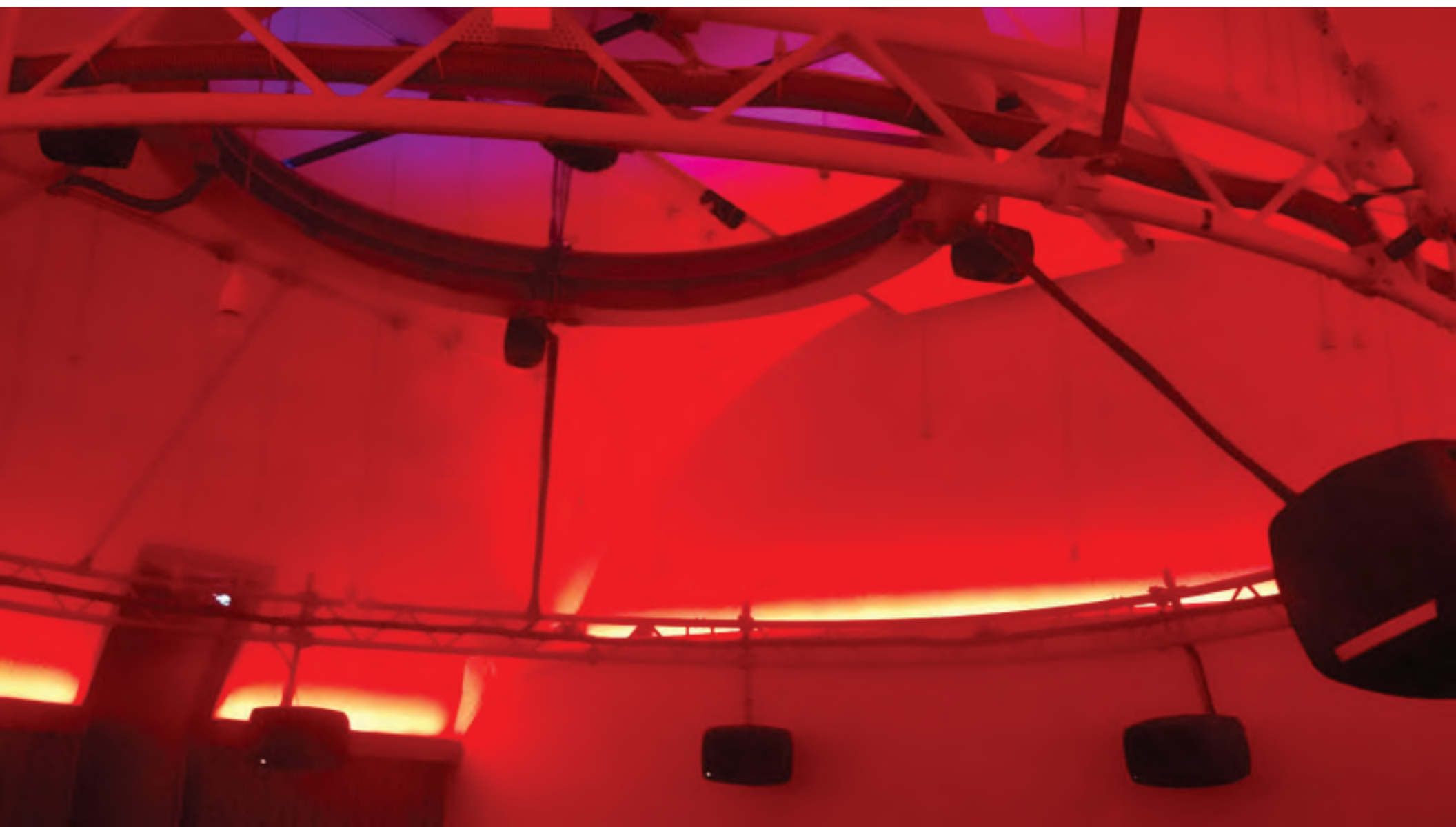


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## KKH - AMPLIFIERS AND SPEAKERS CLASS 7





## KKH - AUDIORAMA VISIT AND SETUP CLASS 8 & 9



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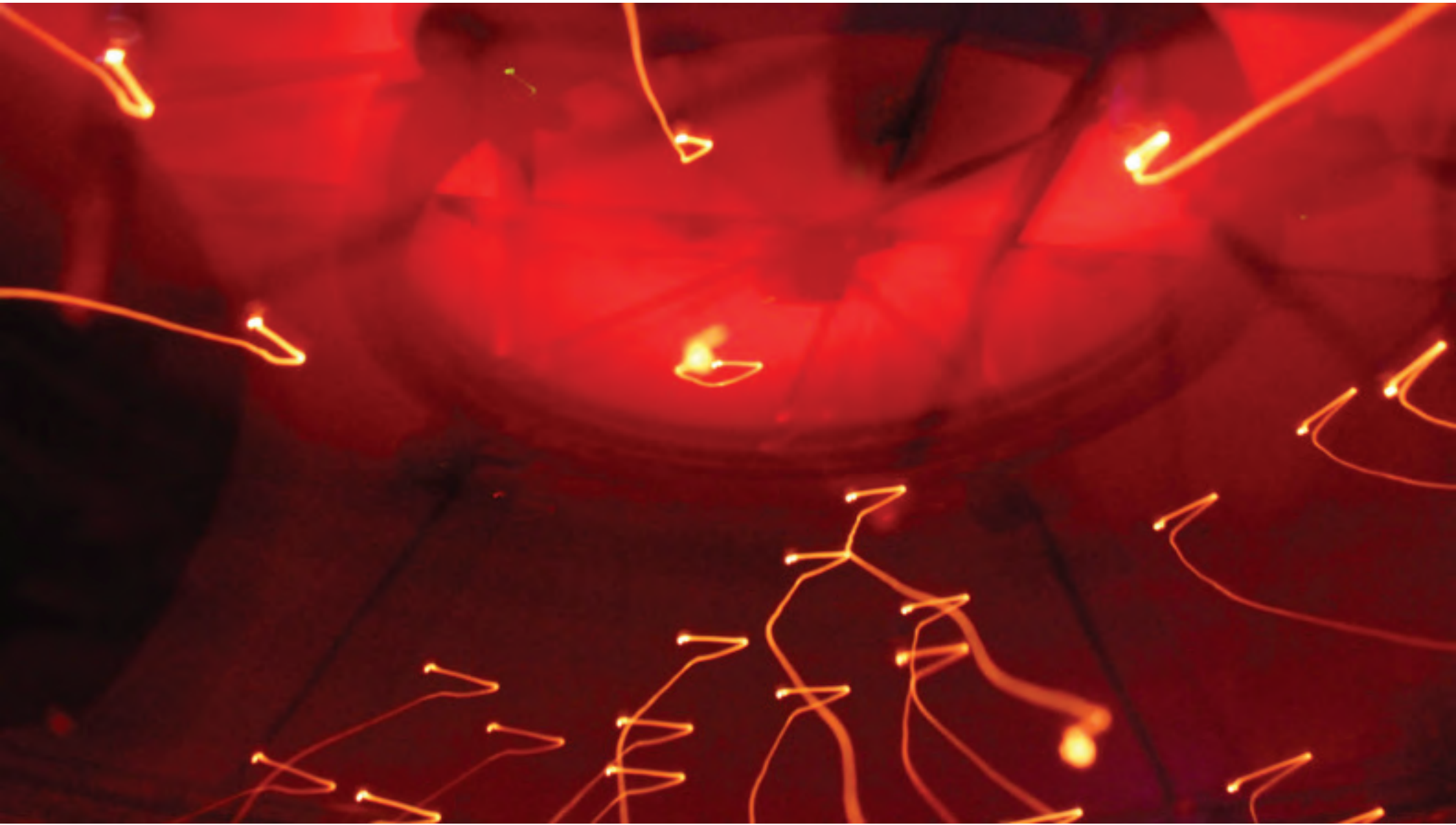


## KKH - AUDIORAMA VISIT AND SETUP CLASS 8 & 9



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## KKH - CLASS 10 AUDIORAMA PERFORMANCE



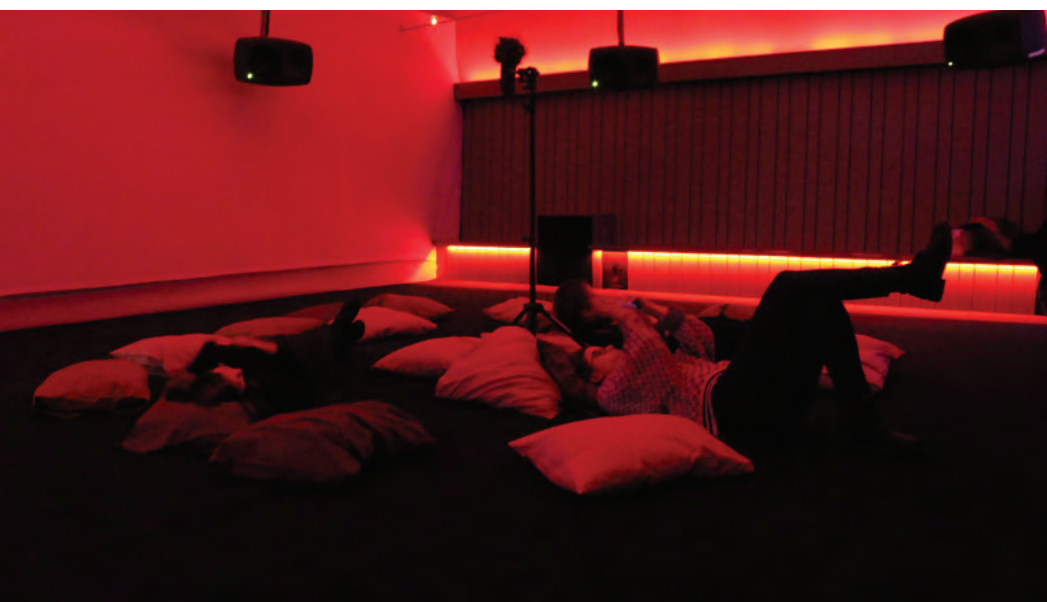
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