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Immersive 3D Recording based on Psychoacoustics

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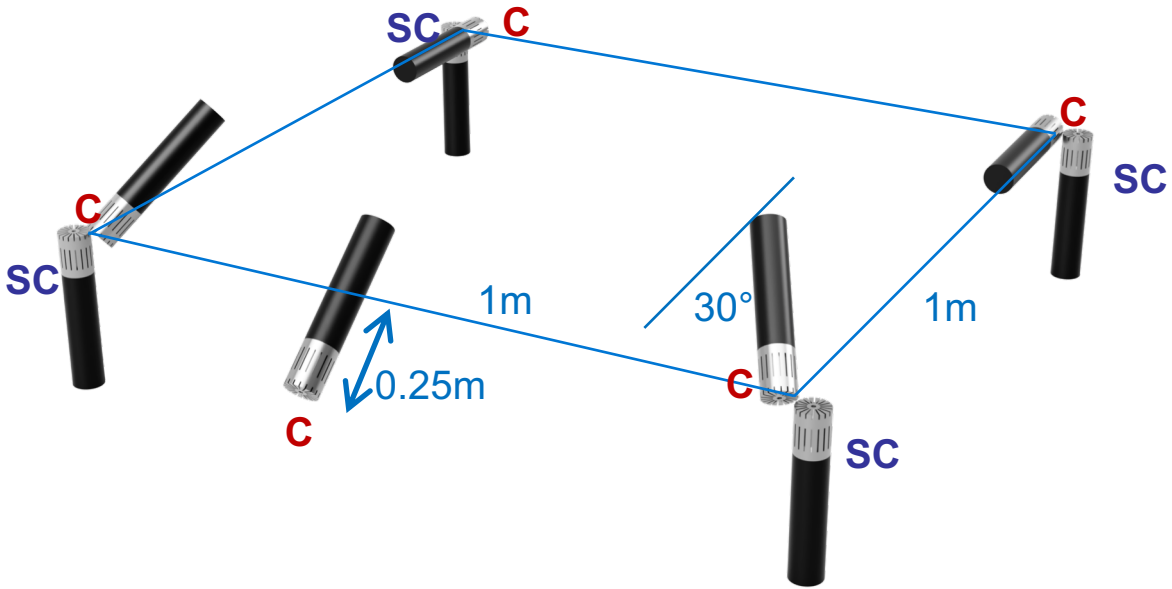
THE QUEEN'S AWARDS FOR ENTERPRISE

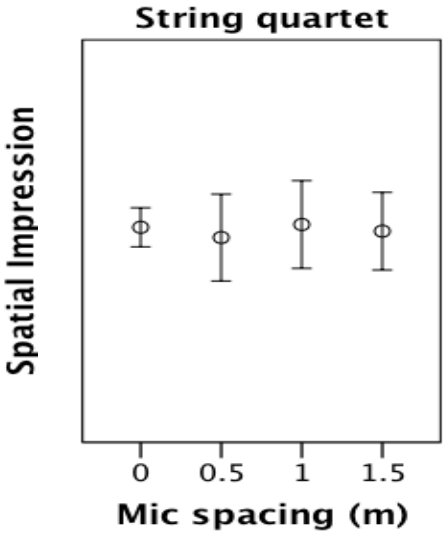
PCMA-3D

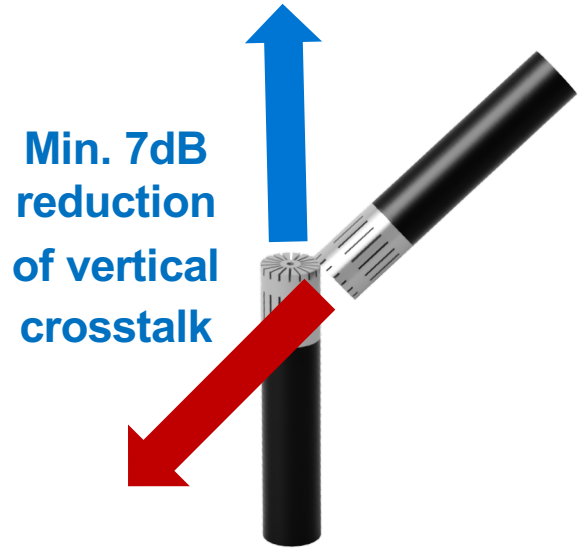
- Perspective Control Microphone Array 3D
- Based on Lee 2011, Lee and Gribben 2014.
- Horizontally spaced, vertically coincident.



PCMA-3D

- The effect of vertical mic spacing & decorrelation is little or none for 3D spatial impression (Lee and Gribben 2014, Gribben and Lee 2018)
- Reducing vertical interchannel crosstalk for stable vertical imaging (Lee 2011, Wallis and Lee 2016, 2017)





Siglo De Oro at Merton College Chapel, Oxford

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- Recorded in 11.0 using the PCMA-3D concept.
- Pure Audio Blu-ray
  - Auro-3D 9.0 96kHz
  - Dolby Atmos 48kHz
  - DTS 5.0 192kHz
  - LPCM 2.0 192kHz
- To be released by Delphian Records on 18 May.

SCHOEPS Mikrofone

pure audio

DOLBY ATMOS

AURO 3D AUDIO

dts HD Master Audio

msm studio group ltd.

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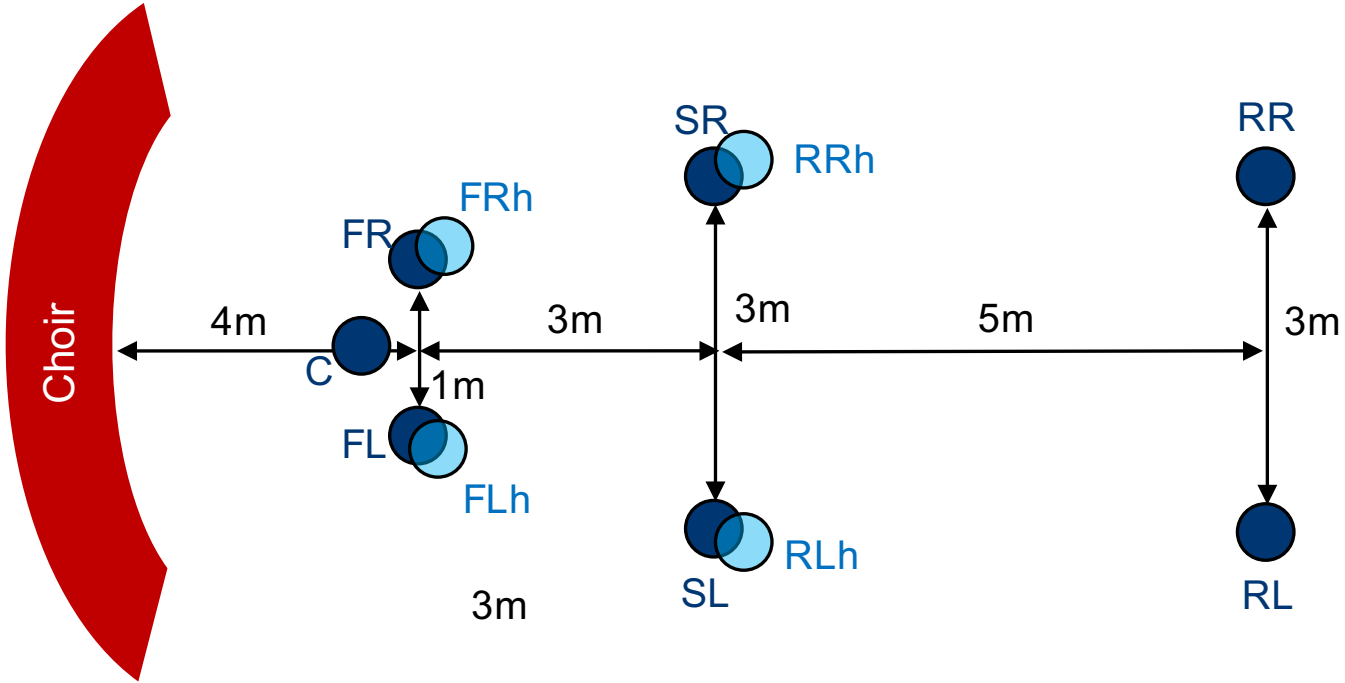
Siglo De Oro at Merton College Chapel, Oxford

- PCMA-3D microphone arrangement for 11.0 (7+4)



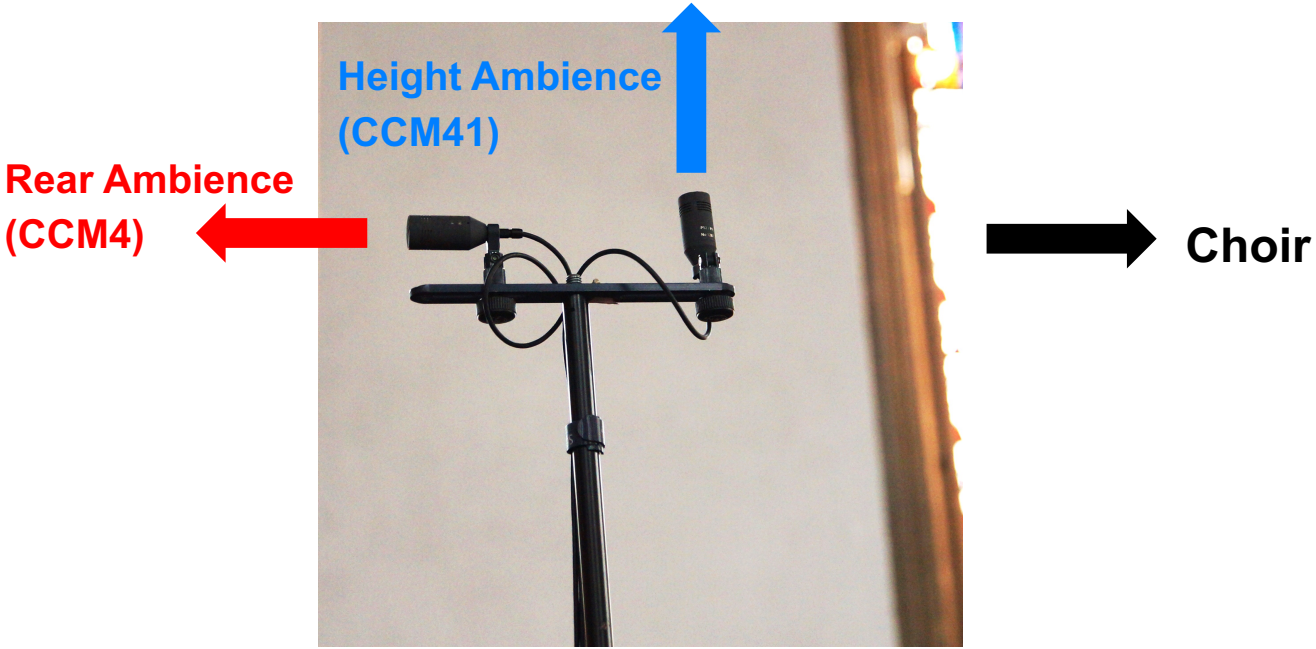
Siglo De Oro at Merton College Chapel, Oxford

- Microphones used: Schoeps CCM4 (main) and CCM41 (height).

Frontal array

Siglo De Oro at Merton College Chapel, Oxford

- Microphones used: Schoeps CCM4 and CCM41.



The Ebor Choir at York Minster

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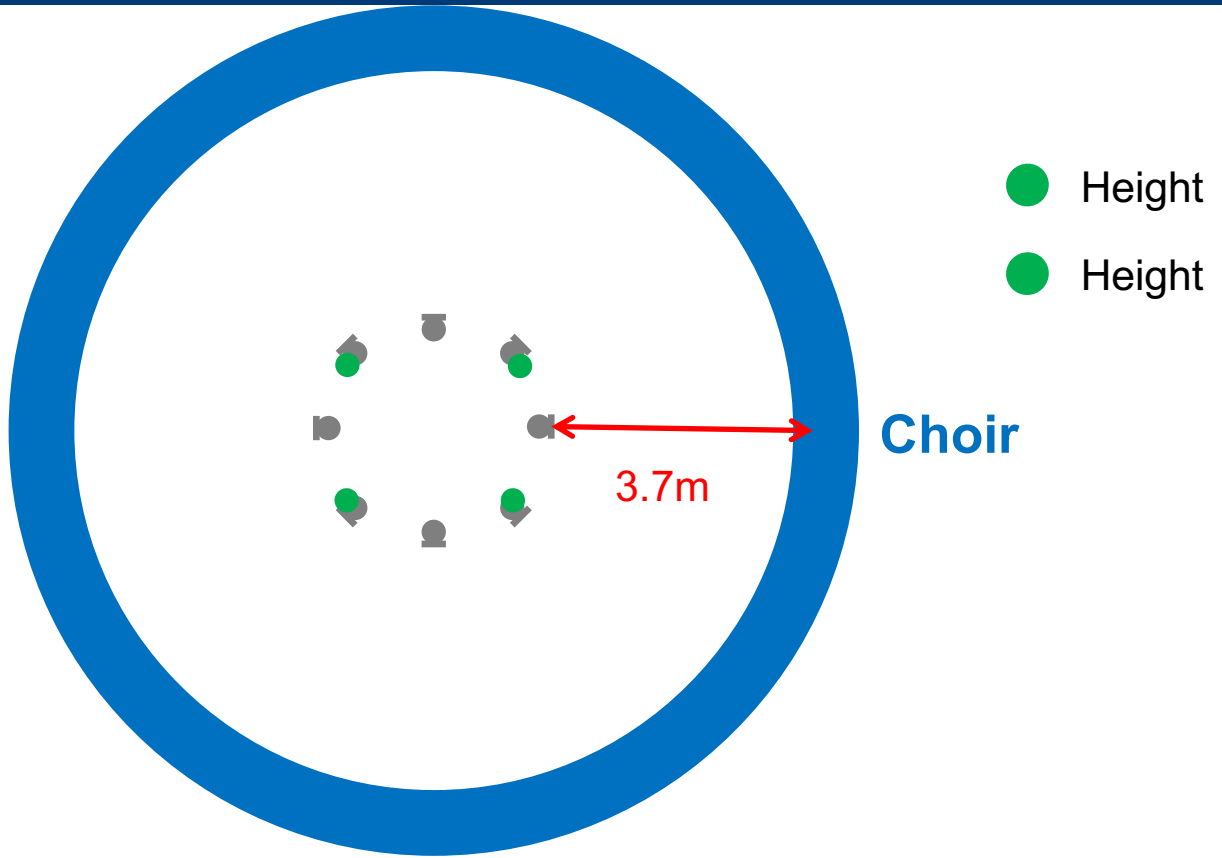

Schnyder Triple Concerto at Victoria Hall, Geneva

Schnyder Triple Concerto at Victoria Hall, Geneva

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ESMA-3D

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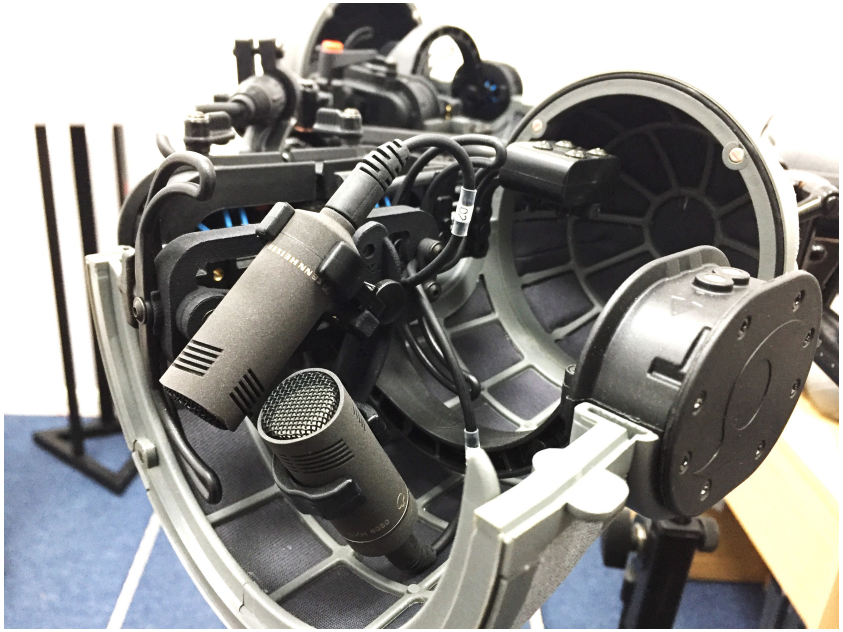
- Equal Segment Microphone Array 3D (for 360 VR recording).
- 50cm x 50cm square, for accurate localisation in a quadraphonic reproduction (Lee 2016).
- Vertically coincident (Cardioid main + supercardioid height.)



Manhattan Soundscape – Pier 81

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Manhattan Soundscape – Washington Square

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Manhattan Soundscape – Washington Square

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Manhattan Soundscape – Union Square

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Manhattan Soundscape – Union Square Subway

Manhattan Soundscape – Grand Central Station

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THE QUEEN'S AWARDS FOR ENTERPRISE

Manhattan Soundscape – Grand Central Station

Manhattan Soundscape – Time Square

Manhattan Soundscape – Central Park

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Manhattan Soundscape – 34th St. / 10th Ave.

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Manhattan Soundscape – Hudson Yards

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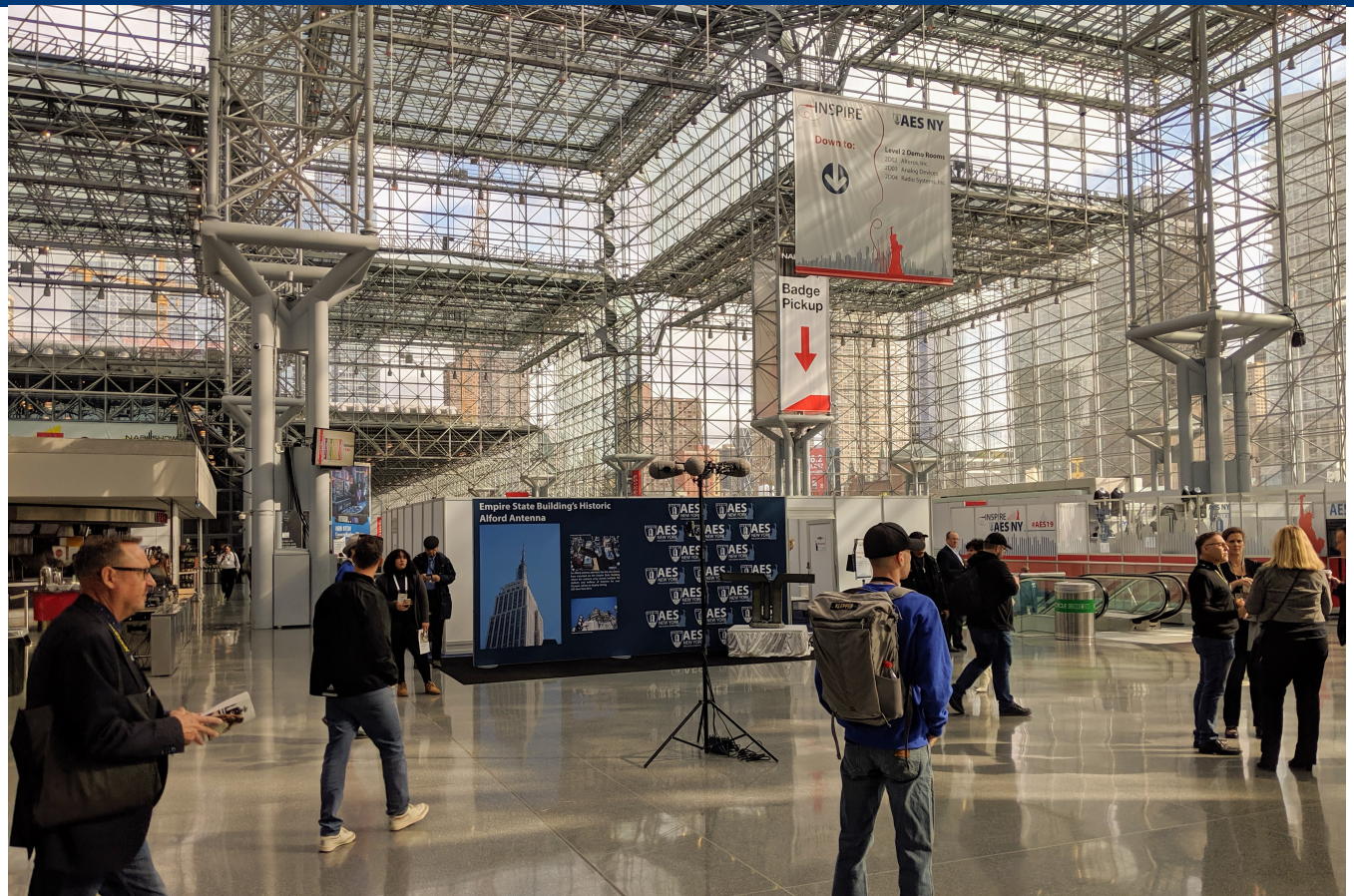
Manhattan Soundscape – Javits Center



3D MARCo Database

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Microphone Techniques Used

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3D Main Microphone Arrays (9-channel)

- PCMA-3D
- OCT-3D
- 2L Cube-inspired
- Decca Cuboid

3D Ambience Arrays (8-channel)

- Hamasaki Square with height at 0m and 1m

Ambisonics/Spherical Array

- Eigenmike EM32 (HOA)
- Ambeo FOA

Binaural

- KU100 dummy head

Additional Microphones

- Side/height pairs
- Floor L, C, R
- ”Voice of God”
- ORTF
- Spot mics


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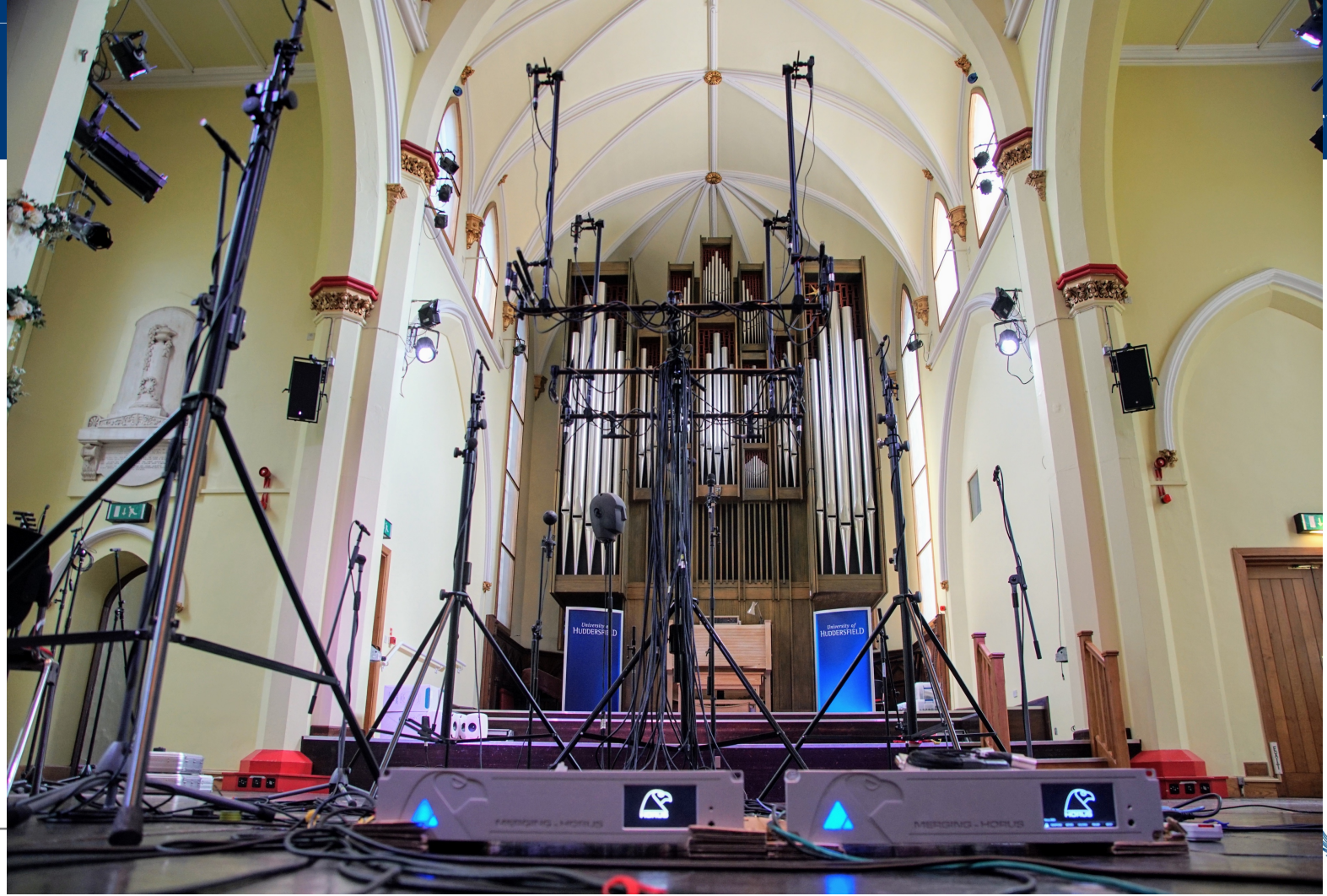
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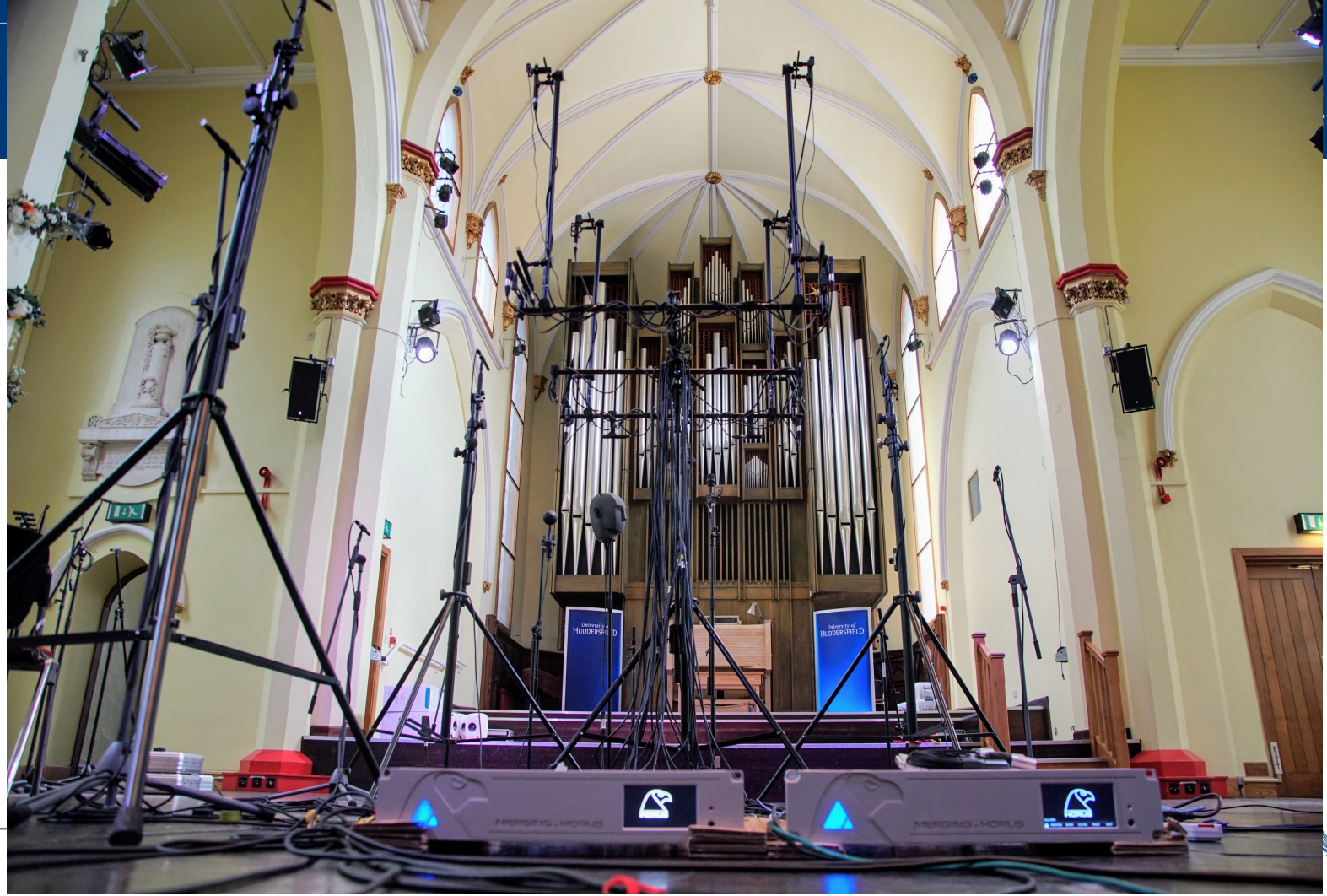
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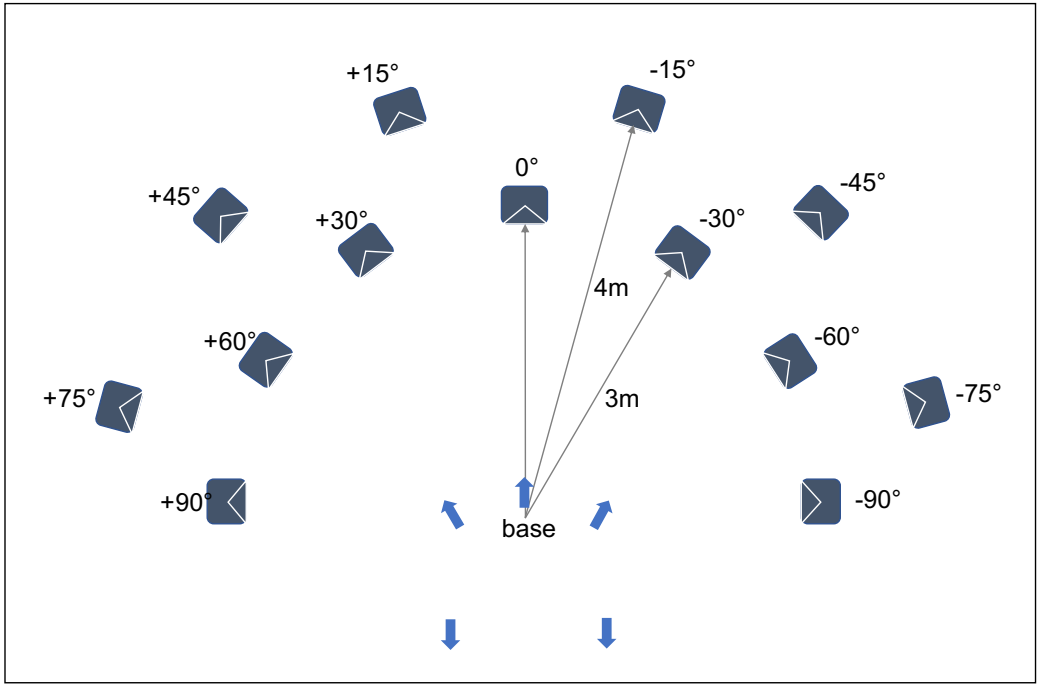
Mic array impulse responses (MAIRs)

- 13 source positions with 15° angular resolution for all mics.
- Exponential sine sweep method / HAART (24 in/ 24 out)



“3D-MARCo” Open-Access Database

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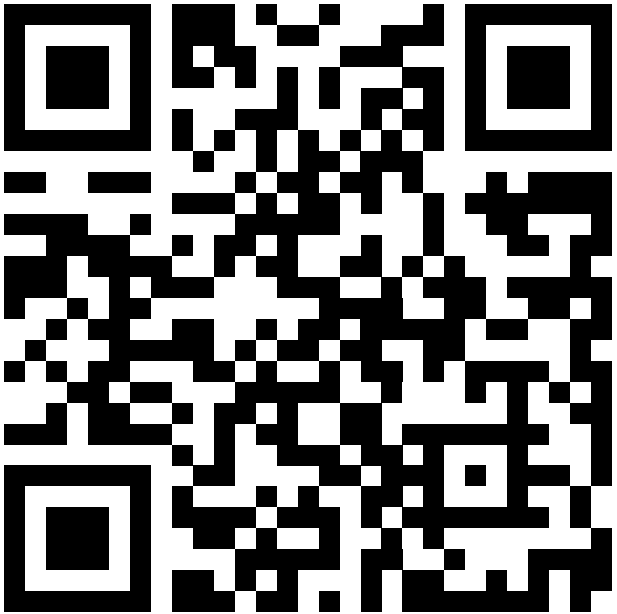
- 3D Microphone Array Recording Comparison (3D MARCo)
- **Free download from https://doi.org/10.5281/zenodo.3474285**



THE QUEEN'S AWARDS FOR ENTERPRISE

References

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