

# FERME DU BUISSON - MÉMOIRE LOUIS LUMIÈRE THIBAUT HUSSON 2011



- 8 haut-parleurs au dessus du nez de scène plus deux sub
- Configuration “minimale” pour la sonorisation en WFS
- Alternative: haut-parleurs sur scène (salle gradinée, configuration assise)
- adaptée à une salle moyenne (<400 places)

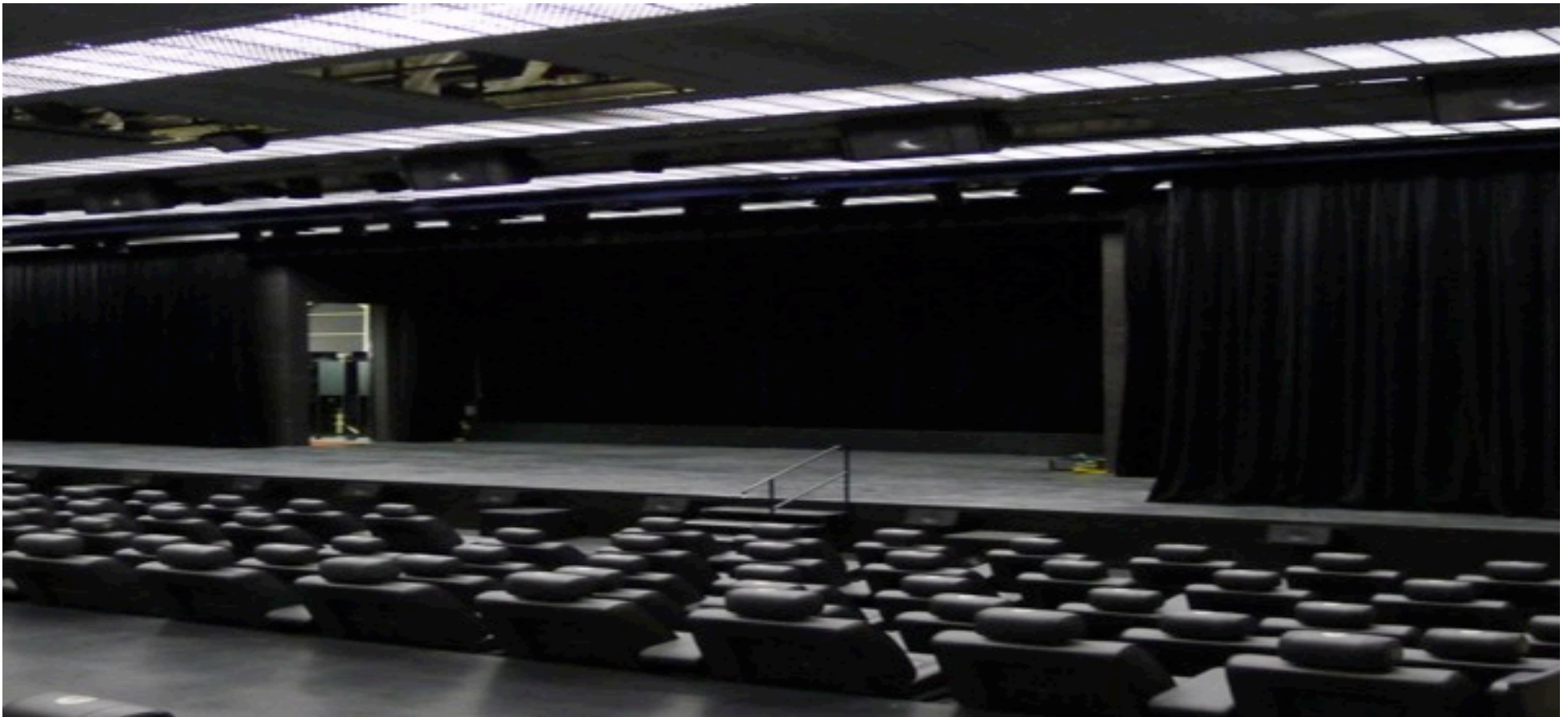


# INSTITUT DU MONDE ARABE, PARIS (FR)

*permanent installation - 2011*

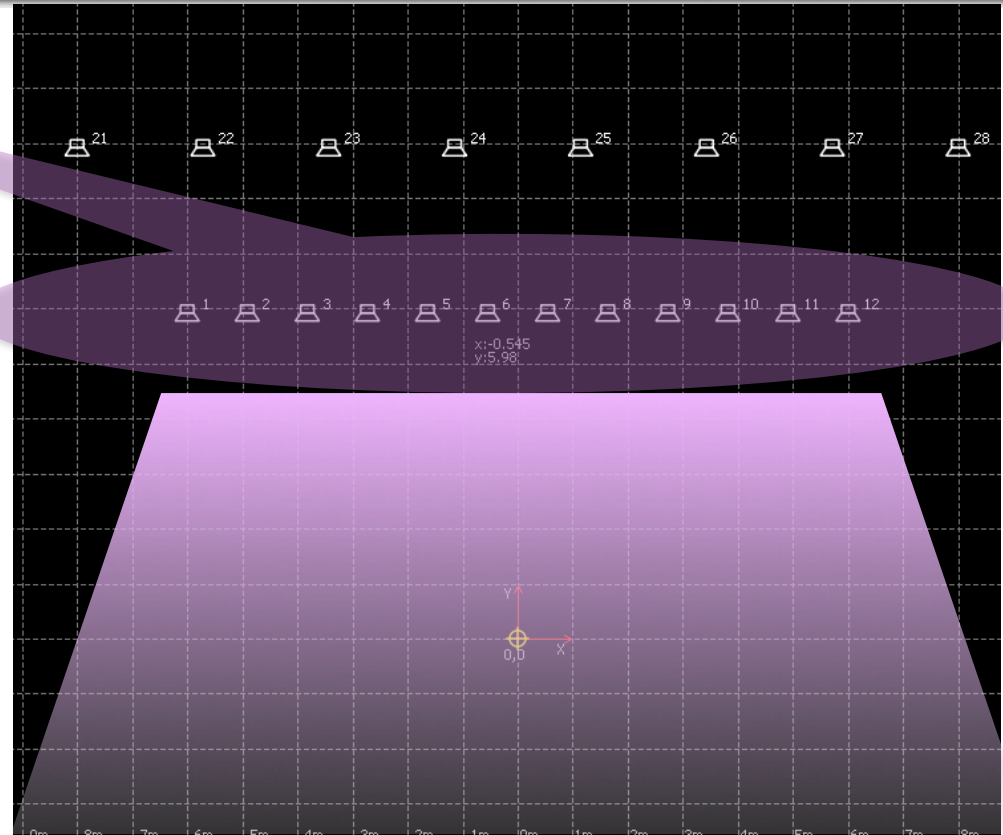
Main sound reinforcement system

19 loudspeakers + 6 subs → Multiple level WFS



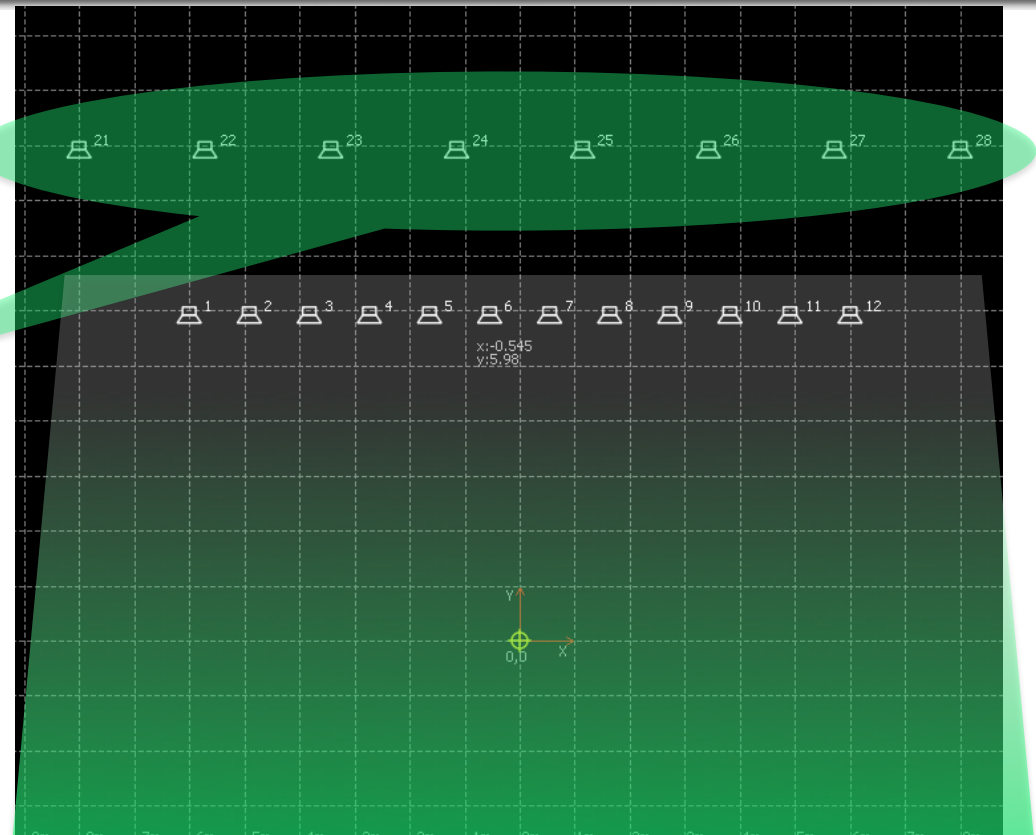
# MULTIPLE LEVEL WFS

- Main WFS
  - On stage: spatial rendering for first rows



# MULTIPLE LEVEL WFS

- Main WFS
  - On stage: spatial rendering for first rows
- Support WFS
  - Directive speakers above stage (ex: 15 inch coax, large multiway system, or small line arrays)
  - Spatial rendering + high SPL far end hall



# WAVE I - INSTITUT DU MONDE ARABE PARIS

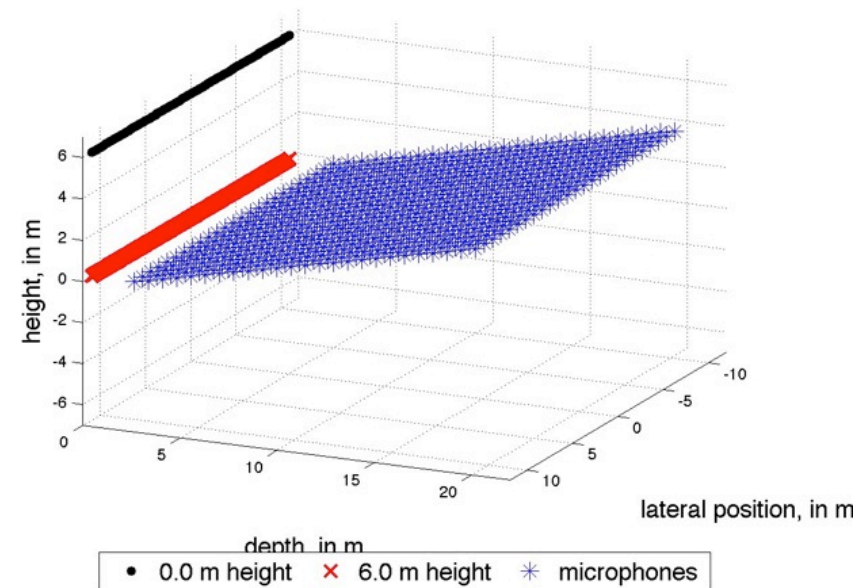


Support WFS, 7 \* 15 inches  
coaxial, bi-amplified system,  
design TMS, manufactured  
by APG

Main WFS, 12 \* 8 inches coaxial, APG

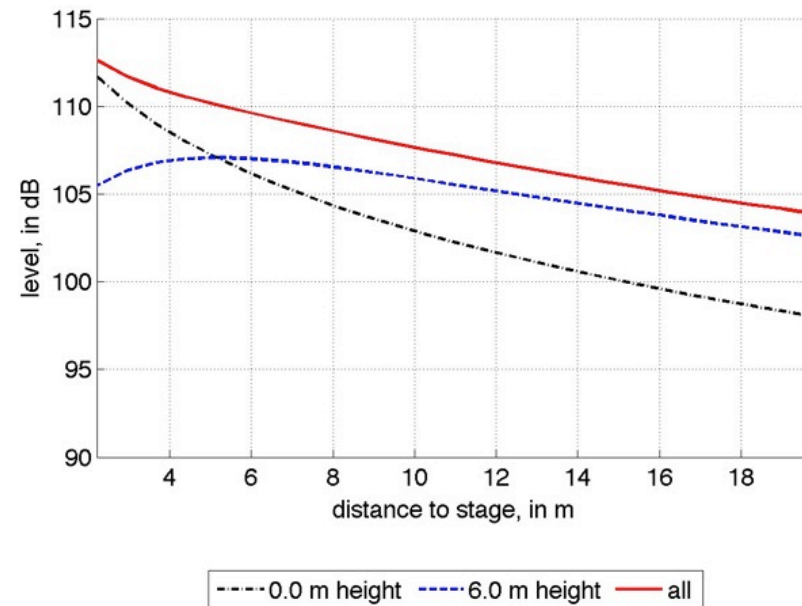
# BENEFITS OF MAIN/SUPPORT WFS RENDERING FOR SOUND REINFORCEMENT

- Simulations based on IMA configuration
  - 12 loudspeakers below stage, 95 dB sensitivity, 400 W amp power
  - 7 loudspeakers above stage, 6 m height, 100 dB sensitivity, 400 W amp power → getting directive



# BENEFITS OF MAIN/SUPPORT WFS RENDERING FOR SOUND REINFORCEMENT

- High SPL reached at the end of the audience
- Overall attenuation very limited, +/- 3 dB
- Higher contribution of on stage loudspeakers in first rows → good vertical localization



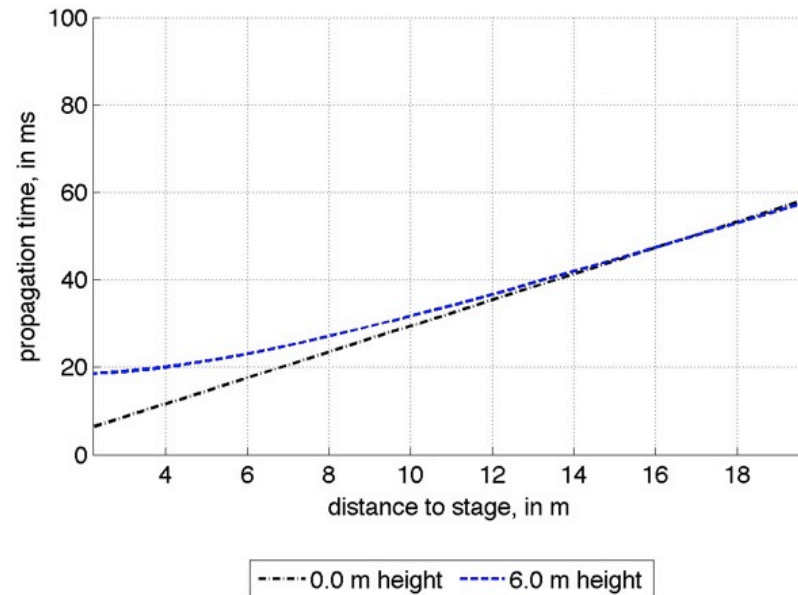
# BENEFITS OF MAIN/SUPPORT WFS RENDERING FOR SOUND REINFORCEMENT

🌀 Natural delay of upper compared to lower loudspeaker array

➔ Precedence (Haas) effect favors localization on lower loudspeaker array

🌀 Enhanced Haas effect can be further obtained by delaying upper support array

➔ Localization on lower loudspeaker array further back in the room



# PARIS JAZZ FESTIVAL/CLASSIQUE AU VERT, PARC FLORAL, PARIS 2013

Marianne Gaussiat, head of Classique au Vert festival: “It really is a technological breakthrough”



3 Line arrays  
above stage  
5\*Q1 D&B (L/R)  
et 4\*Q1 D&B

10 \* 8 inch  
coaxial MTD 108  
L-Acoustics

# TÉMOIGNAGE CLASSIQUE AU VERT 2013

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<http://www.youtube.com/watch?v=b5ZVJZtckNk&list=UUSiGxc8kP3v1QOWZrf6T-Qg>



# RADIO FRANCE, PARIS (FR) 2013 STUDIO 105, SYSTÈME PÉRIPHÉRIQUE

- Main sound reinforcement system, used twice a week for live shows!
- 10 front fill loudspeakers +3 line arrays (Metrix Adamson) +18 surrounding + 1 sub → Multi-level WFS



# AUTRES RÉFÉRENCES

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- 🌀 Nawal, trois baudets, 2012
- 🌀 Palais en jazz, compiègne 2013
- 🌀 Pianoscope, Beauvais 2013
- 🌀 D'Jazz Nevers 2013
- 🌀 Sons d'hiver 2014 (8 concerts dans 6 salles différentes sur 3 semaines)
- 🌀 ...

# WFS FOR SOUND REINFORCEMENT

Spatial sound reinforcement → High intelligibility of sound stage (*easier to mix for sound engineer*)

- 24 inputs, freely adjustable position (direct out + stereo/multichannel bus)
- 8 (stage portal) to 48 loudspeakers
- Limit audibility of individual speakers:
  - Sound field rendering : spatial sound reinforcement for everyone!
  - Improved power distribution over entire audience

