

ACOUSTIC PROJECT OF CONI HALL OF HONOR

The CONI Hall of Honor (ex Aula Magna) is located inside the H-shaped building of CONI, the former Fascist Academy of Physical Education. Palace H was designed by architect Enrico Del Debbio in 1927 as part of the monumental complex project of the Foro Italico. In the summer of 2017, the restructuring and enhancement project was launched. We wanted to solve the acoustics of the room that seemed inadequate at the time. The room is intended for main use for conferences of up to 500 people and round tables with 40 microphones. The events therefore foresee different configurations in the disposition of the public and sources.



Resonance modes:

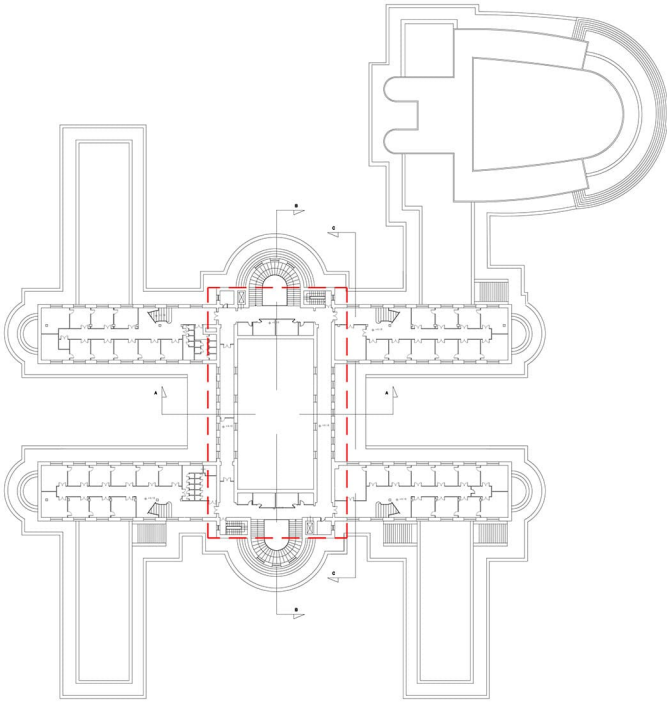
In the case in question, the height is comparable to the width and the length is a multiple. This leads to the acoustic case of the double cube; the reflection between the sound, floor and ceiling, at certain frequencies, is enhanced, simultaneously, numerous destructive interferences are produced. This phenomenon, from the instrumental analysis carried out, emerges in particular on the voice's own frequencies ($> 2000\text{Hz}$).

Auditorium of CONI
Rome, Italy



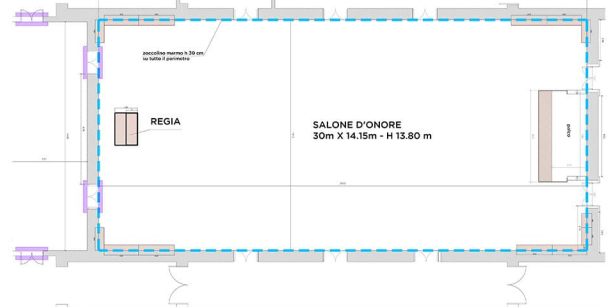
Ceiling problem:

In our case, the panels on the ceiling were found to resonate at 2500 Hz; in practice they characterize the sound by "amplifying" only a narrow frequency band with an unpleasant "metallic" voice effect.



The scope of intervention for the acoustic implementation of the surfaces and furnishings was particularly limited due to the nature of the previous restoration project: the ceiling had a previous unchangeable acoustic intervention, using standard acoustic panels, smooth plastered wall, and a marble floor.

The intervention therefore necessarily focused on a flexible configuration of the acoustic system. And on the use of the non-coherent acoustic wave principle.



Solution:

Omnidirectional speakers suspended from the ceiling - It is based on the principle that a non-coherent wave is more similar to the natural wave, therefore easier to listen to. Furthermore, the constructive interferences of the reflections are randomly increased.

Omnidirectional speakers are particularly suitable for our purpose because:

- A) High efficiency, reducing the power of the amplifier and the number of devices.
- B) Aesthetics suitable for the place, they are similar to a suspended luminous body, they can have any color.
- C) Suspended from the ceiling, they are easy to place with low weight.

