



University of
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ONLINE APPLICANT EVENT

Studying Acoustics at Salford



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Creating Good Sounding Spaces

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Why sound (acoustic) quality of these space matters?
How sound quality can affect users and usability of the spaces?



Architectural, building, room acoustics address the design, measurement, treatment of these acoustically critical spaces.

(Content of this subject is a forever theme of acoustics will be delivered in several modules).

How to bring the background noise level down?

How to design a small space for recording or as a control room for critical listening?

How to make sure speech is intelligible in theatres, classrooms and through Tannoy in public places?

What characteristics make a good sounding concert hall?

.....many more application scenarios

A photograph of a grand concert hall. The stage is dominated by a large, ornate pipe organ with many tall, silver pipes. The organ is set against a dark backdrop. The seating is arranged in several tiers, with dark seats and light-colored wooden railings. The ceiling is high and features a complex network of white structural beams and several large, decorative chandeliers. The overall atmosphere is one of a classic, high-quality concert venue.

Superb concert hall

Over 2000 people can hear a solo instrument purely acoustically: without amplification

Live Rooms



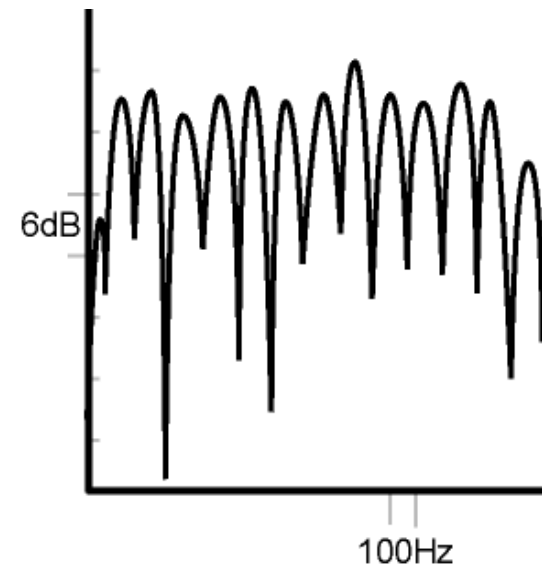
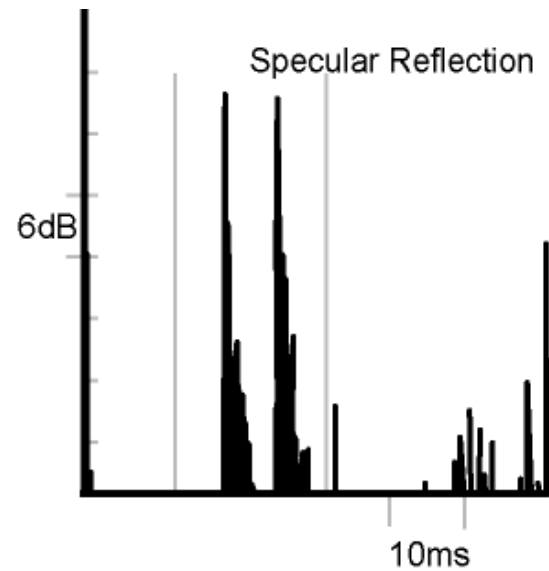


Small critical listening
(control) rooms

Ideas you can use in
arranging your home
recording studio

Why should loudspeakers stay away from walls?

- Comb filtering

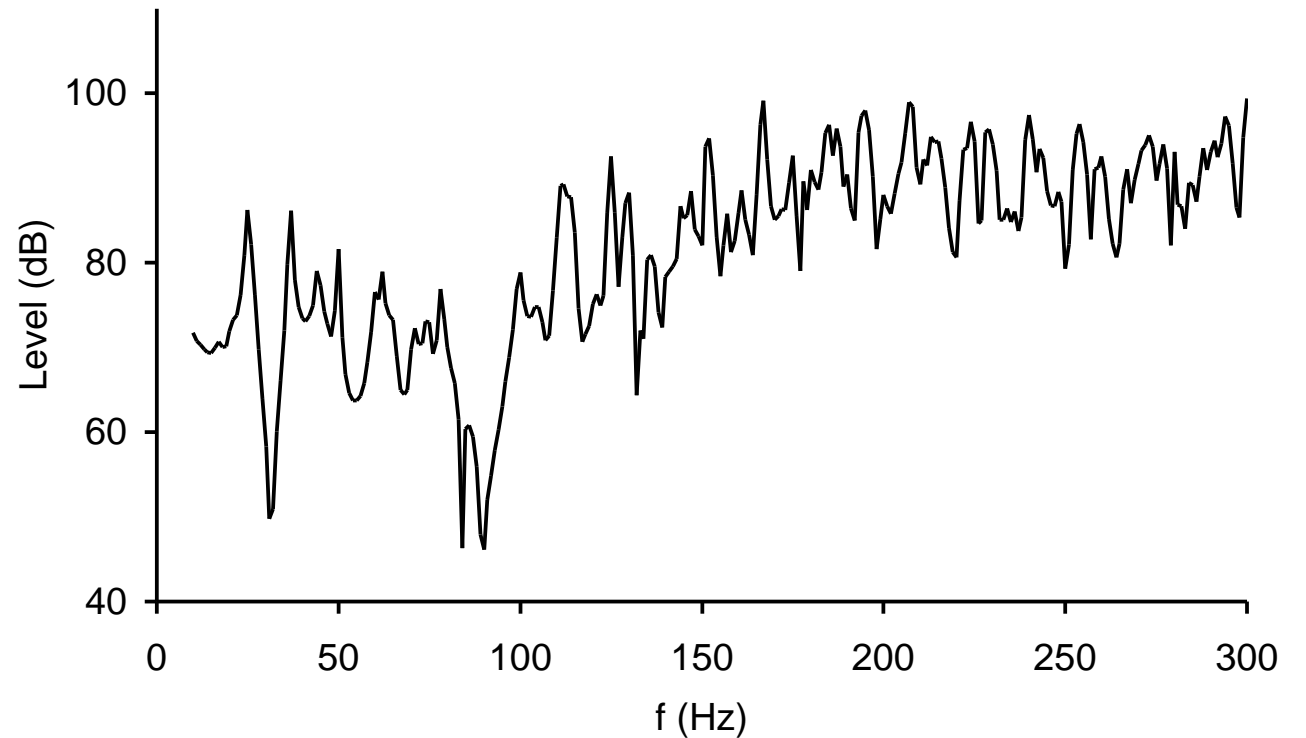


Live-end and dead-end vs Non-environments



Headache of small listening rooms? Low Frequencies – Room Modes

- Audible effects
- Effects of damping and room dimensions
- Effects of changing loudspeaker and receiver positions



Golden ratio

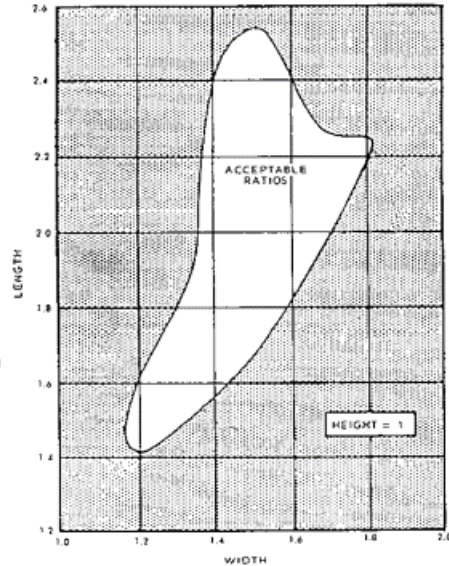
Walker - 1996

Bolt - 1946

- Even mode spacing

$$2:3:5 = 1:1.5:2.5$$

$$1:\frac{21}{3}:\frac{41}{3} = 1:1.26:1.59$$
$$\approx 1:1.25:1.6$$



Preferred room dimension ratios.

Standards

$$\frac{1.1L_y}{L_z} \leq \frac{L_x}{L_z} \leq \frac{4.5L_y}{L_z} - 4$$

$$L_x < 3L_z$$

- Avoids integer ratios
- Avoids worst cases

$$L_y < 3L_z$$


Louden - 1971

- Standard deviation of mode spacing
- 1:1.4:1.9

So, My areas of teach and research

- Room and architectural acoustics related subjects through Group Design Project Module (2nd year).
- Signal processing and machine learning (final year and MSc)
- Speech technology (research only)
- Transducer design (loudspeaker and microphone, but mostly loudspeaker) (final year and MSc)





My options: three
nice features of
audio and
acoustical
engineering

Highly relevant and ubiquitous in everyday life.

(you cannot close your ears!)

Linking up physics, engineering and perception.

(audible-band acoustics is human centred
acoustics!)

Long career span

I look forward to seeing you next academic year.



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