

Measured RIR	Simulated RIR	Perceived Reverberation (RIR)
<ol style="list-style-type: none"> 1. LTI (linear time-invariant) system based 2. No assumptions about room shape 3. No assumptions about sound absorption of materials in the room 4. Room can include variety of furniture or even people 5. RIR estimation will include measurement noise (electronic) and limitations of D/A/D 6. Non-linearities of room response can be avoided through specific excitation such as the exponential sine-sweep 7. possible to obtain SRR (signal to reverb ratio) 	<ol style="list-style-type: none"> 1. LTI based 2. Simulators are limited by the ray tracing or diffuse reflections through Monte-Carlo method. 3. The "order" of reflections is limited to 1st order 4. Detailed furniture or shape or people cannot be included in the model (hence the reverb is often over estimated) 5. No measurement noise or non-linearities of D/A/D or loud-speaker / microphone devices 6. highly computational, but can still be used to compute RIR at many different positions of the enclosure. This will help to find acoustic absorption solutions to bad spots in an auditorium. 7. possible to obtain SRR 	<ol style="list-style-type: none"> 1. No assumption of LTI. 2. ALL non-linearities of hearing mechanism is included in the perception 3. Difficult to quantify the amount of reverb, since it gets blended into the timbre of the source signal. 4. Perceived Reverb will be mapped to next higher level meanings such as intelligibility of speech or the richness of music. 5. HRTF is inherently included in perceived RIR, hence it is NOT purely an enclosure characteristic as in RIR 6. listener to listener variability does exist hence only average response can be obtained. 7. Listening tests are tedious and listeners have to be trained

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