Faster proposed method for optimal speaker location determination

Executive summary

The objective is to identify the sound source location that results in the flattest frequency response at receiver locations, promoting a listening experience aligned with the artist's intention.

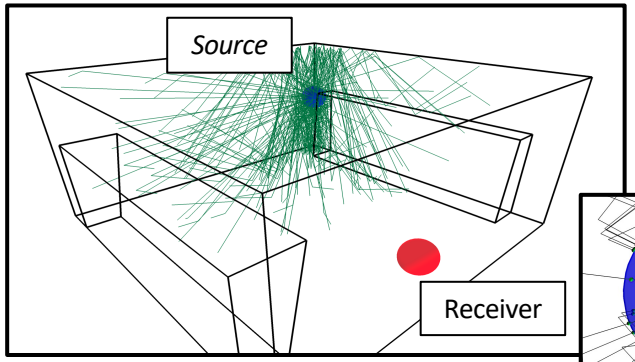
Acoustic ray tracing, which can be used as a method for determining frequency response, experiences slow performance due to missed rays at the receiver.

The proposed method improves performance by using importance sampling with gaussian distributions derived from a previous low-ray count simulations.

However, inconsistent results have been observed, necessitating further research to determine feasibility of the method.

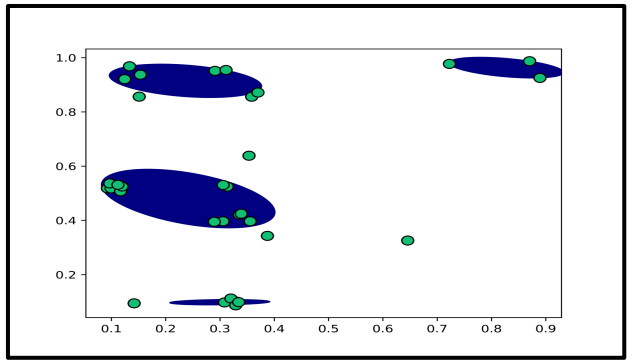
New proposed method

Casting sound rays uniformly on source sphere



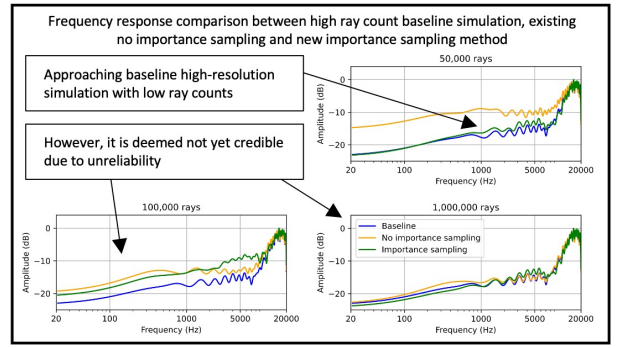
Detecting initial source directions of received rays

Generate gaussian distributions from detected directions



Cast new rays with more probable directions

Potential for **6x** speed improvement, though with unreliable similarity to existing method



Paper available online