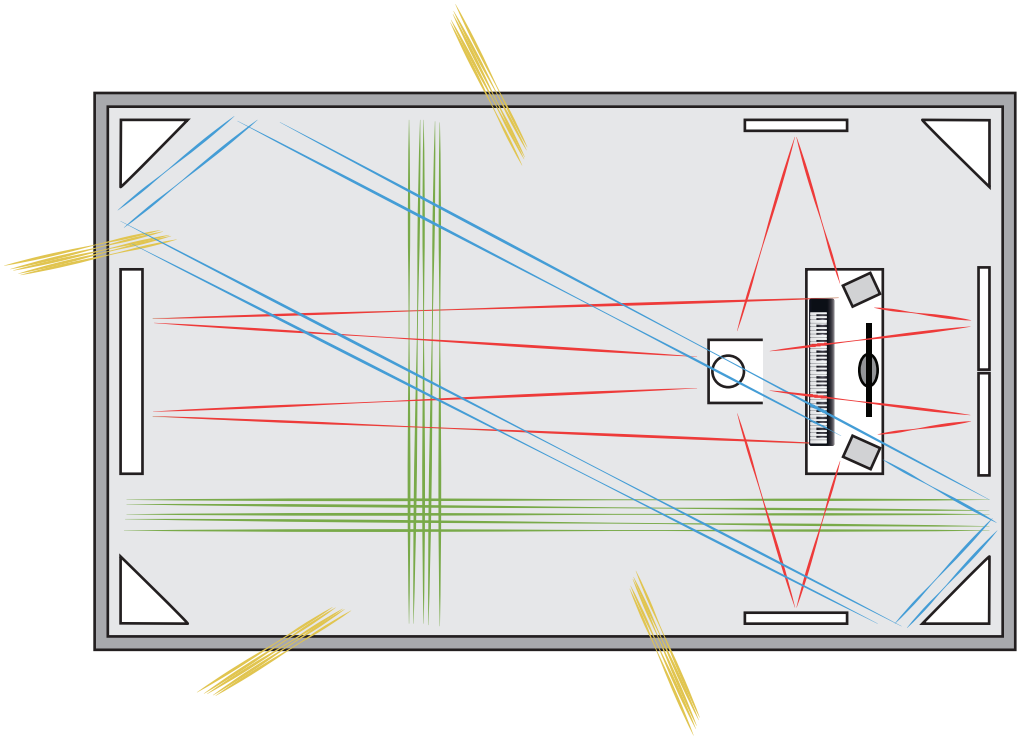
Common Acoustic Issues



- The green lines are ***axial modes***. These are formed when sound bounces between two parallel surfaces repeatedly, each time reinforcing itself at some points and canceling itself at others.
- When modes are very high frequency, it's knows as flutter echo. If you go into a poorly-treated room and clap your hands, this is the high pitch ring you'll surely hear.
- The blue lines are ***tangential modes***. These bounce between four surfaces. Not visually represented are the six-surface, ***oblique modes***. These use too many surfaces to show in a two-dimensional image.
- Red lines represent first reflections from different points in the room. When they arrive at the ear at different times, they filter out specific frequencies and reinforce others. This anomaly is called ***comb filtering***.
- Yellow lines are ***outside noise***. Rigid materials can act as resonators, allowing certain frequencies through as if the walls weren't even there. Low frequencies are especially hard to isolate out of a space.