Rephase & Phase Correction

Phase correction with Rephase is only for the minimum-phase part of the problem. In a very reflective room with large phase swings, most of what you're seeing is not meaningfully correctable with phase EQ.

Reflections Create Non-Minimum Phase Behavior. Digital phase correction (using a Linear Phase FIR filter like what RePhase generates) works best when the measured system is minimum phase. A minimum phase system is one where the phase response is uniquely determined by the amplitude response, and the time delay is the smallest possible.

Reflections, especially early reflections (like those you get in a reflective room) introduce delayed versions of the sound that can be close to the amplitude of the direct sound. These delayed arrivals create non-minimum phase behavior and the resulting severe phase shifts (often seen as sharp, jagged swings in the phase plot).

The Consequence: A single corrective filter cannot distinguish between the phase shift caused by the speaker's internal components (which are minimum phase and fixable) and the phase shift caused by destructive acoustic interference from reflections (which are non-minimum phase).

Focus on the Low Frequencies and Time Windowing

It still absolutely makes sense to adjust phase in the low-frequency region and for system-wide timing issues.

Below Schroeder Frequency: Room modes (the primary source of low-frequency peaks and dips) are largely minimum phase and are where phase correction is most effective. The Schroeder frequency (often between 100 Hz and 300 Hz, depending on room size) is the typical upper limit for successful room mode correction.

Timing Alignment: Using REW's time-windowing (FDW - Frequency Dependent Window) or other gating techniques can help isolate the direct sound, allowing you to identify speaker-induced phase shifts (like those from crossovers) which are much more amenable to correction in RePhase.

Advise & Conclusion

Use DSP Correction (Active) for:

1. Amplitude: Use REW EQ for broad magnitude correction, especially for the room modes in the bass region.
2. Phase (RePhase): Focus your phase correction primarily on the low-frequency range (typically up to 150 Hz to 250 Hz) to linearize the phase associated with your room mode EQ. You can also correct phase shifts introduced by speaker crossovers.

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