

Phasing

Whenever you use more than one microphone to record a source, there is a chance that certain frequencies will be out of phase. This means that a frequency may arrive at one microphone slightly before it reaches the other, and the two recordings will cancel each other out. This will sound odd when you listen back to the recording - certain notes will be louder than others, or the bass will be very loud or very soft. It is easy to run into phasing problems when mixing in stereo, and using three or more microphones makes this problem even worse.

There are a few steps you can take to reduce phasing problems when recording:

The 3:1 Rule. This rule simply states that a microphone should be three times farther from another microphone than it is from the source. So if you place a pair of microphones 6 inches away from an acoustic guitar, these mics should be 18 inches away from each other to minimize phasing problems.

Don't use more microphones than necessary. The more mics you add, the better the chances for phasing to occur. It's often tempting to use a dozen tracks or more to record a drum kit when you have that many tracks available, but you may need to move the mics around for hours if phasing problems pop up. Of course, a stereo pair doesn't always do the trick, so you need to find the right compromise.

Watch out for reflective surfaces. You might get phasing problems if the sound is bouncing off of a nearby wall or a music stand. Moving the performer or adding absorption to the problem area can often eliminate the problem. Often draping a towel over a music stand can eliminate high-frequency phasing problems from sound bouncing into the mics. Also remember that a cardioid mic pointed away from another performer may still pick their sound up as the sound bounces off of the back wall and into the mic.

Make sure that the microphones are in phase. If one of the microphones is out of phase (two of the leads of the microphone cable are reversed or the phase switch is pressed on the microphone preamp) and the pickup patterns of the two mics overlap, there may be phase cancellation in distance-related frequencies.

Separate the performers. If possible, make sure that the performers are as far apart from each other as possible to eliminate leakage between the microphones. In a larger studio, consider putting performers in isolation booths, or at least putting gobos between them. However, some gobos may themselves cause phasing problems from imperfect sound absorption or from covering the back of the microphone, thereby altering the mic's polar pattern.

Use a baffle. Often an acoustic baffle can stop sound from leaking from one microphone to the next. You can place a baffle between two performers, or even between two microphones to increase separation. Try using a small baffle between the snare and high hat mics on a drum kit, for example, or between two mics on a piano.

Move the Microphone. This is the easiest and most effective trick to get rid of phasing problems. Just get into the studio with headphones on and move the mics around until it sounds right!