

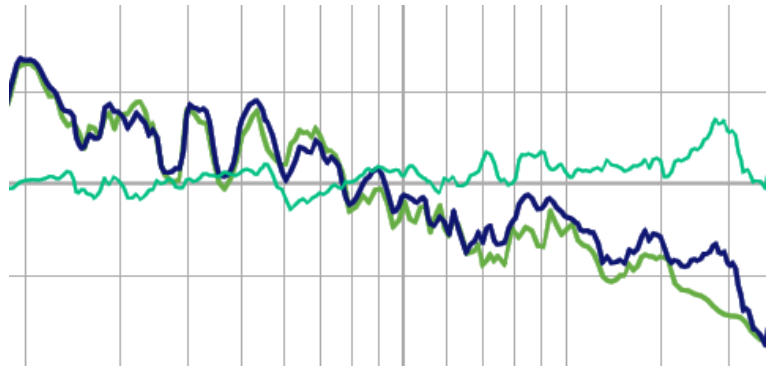
Friday for Features will take a look on not so well-known features in SATlive, thus helping you to improve your user experience with SATlive.

The topic of today's Fridays for Features is:

Make the difference: The delta – trace  $\Delta$

The symbol used to indicate a difference is the Greek letter delta  $\Delta$ . So the trace, that shows the difference between two traces, is called the Delta – Trace in SATlive. As expected, the Delta – Trace will show the difference of two traces.

Well, that's nice to have the opportunity to show the difference, but the more important question is: What benefit offers this function for the use of SATlive.



The reason for adding this

function was the wish to ease the setup of a cardioid subwoofer array. To achieve best cancellation you must match the amplitude response of the speakers as perfect as possible. Doing this looking on both amplitude – response traces works, but due to the falling edges of the response setting the vertical scale is demanding, because you need a zoomed view to see small level differences, but that setting will leave both edges of the frequency out of the display.

The delta trace overcomes the problem. You just have to look on one trace and try to get its amplitude values close to 0 dB in the frequency range of interest.

By the way, the delay – suggestion tool works great for finding the delay needed.

Just mark the area of interest and run the delay – suggestion tool. Remember that you must run it *before* you invert the polarity.

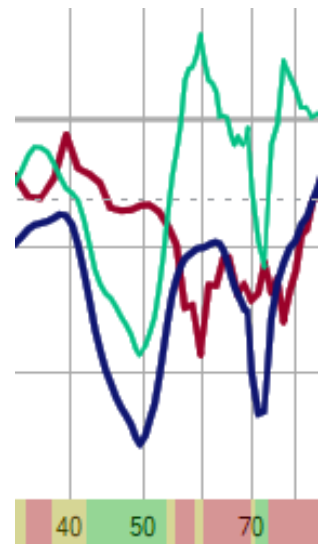
While the Delta – Trace was there, another useful application occurred. During workshops people often ask, which frequency range they should consider for time

- alignment of tops and subs. Beside of many others, Merlijn van Veen recently published some articles about that subject. To make a long story short, we can say that the amount of interaction (cancellation and addition) of two signals depends on the relationship of the two amplitudes. The threshold for +/- 6dB ripple is a difference of 4 dB and the threshold for +/- 3dB ripple is around 10dB difference in amplitude. Knowing that, we can use the Delta - Trace as an indicator that will show us, where we have to, where we should and where we do not care about time - align of two sources. Unfortunately the Delta - Trace will not show the absolute value of the difference. Therefore a 4 dB difference in level will occur either as +4 dB or as -4 dB in the Delta - Trace.

So the Area of Interaction feature was added to the Delta - Trace. With the delta - trace showing and the option *Mark Area of Interaction* checked in the menu of the Delta - Trace the frequency - scale at the center of the display will indicate the absolute difference in level using three colors.



You can edit the threshold values for this feature in *Setup* → *Post Process*. By default the app will mark an absolute difference in level below 4 dB in red, an absolute value between 4 dB and 10 dB in yellow and an absolute difference above 10 dB using green color. So you have a clear visualization of the areas you need to take care of (red), you should take care of (yellow) and the once that need lesser attention.



You can use the Delta - Trace also for QC (quality check) purposes, but keep in mind that the colors will show the other way round. So red will indicate that both traces are close but green will indicate that the trace are far apart and something seems to be wrong.