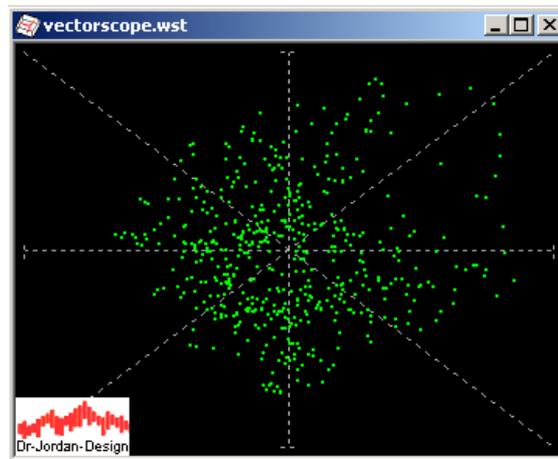


## 1. Vectorscope / Goniometer

The Vectorscope also known as a Goniometer is a powerful and widely used tool for monitoring stereo signals. Originally it came from traditional analog oscilloscope. The first channel is send to the x-input the other channel is send to the y-axis input.

With little training this display gives a fast overview of a stereo signal and the phase relation between the channels. The picture below shows a typical example for music.

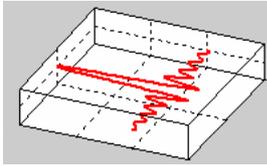


### Features

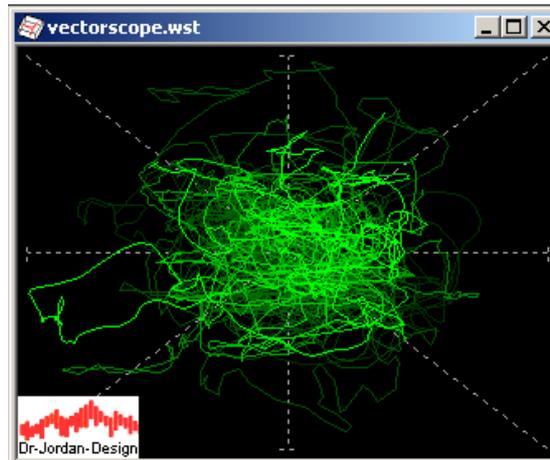
- Dot or line display
- Persistent display with fading effect
- Adjustable decay time
- Free rotation
- Free size of display

The display is optimized for fast attack times combined with a maximum of information. Instead of single pixels you can activate lines with a special persistent view. In contrast to analog oscilloscope you can even adjust the persistent time. We use a special exponential decay profile.

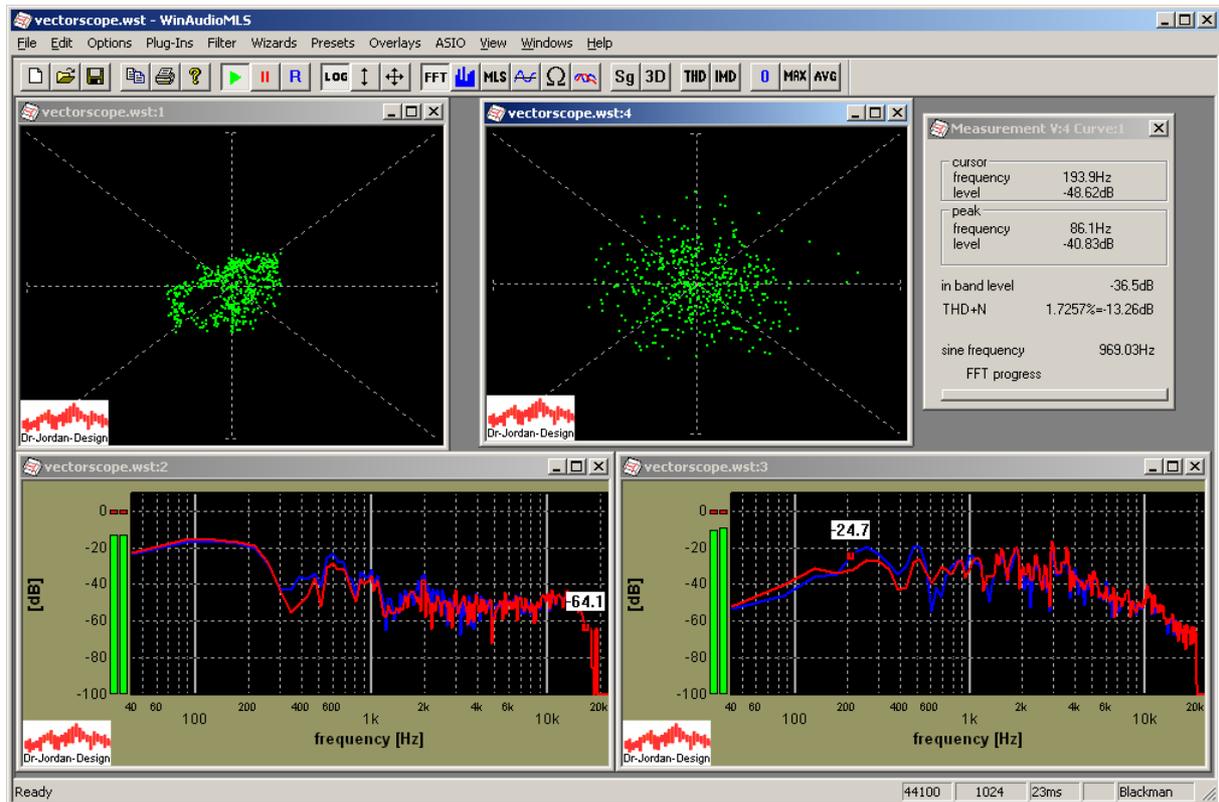
You can rotate the display by +45 or -45 degrees or with an arbitrary angle. With these optional rotations, mono signal are on the main axis.



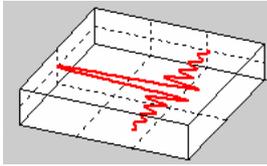
# Dr-Jordan-Design professional digital signal processing



With the multichannel features of WinAudioMLS you can monitor up to 32 stereo pairs simultaneously. You can combine it freely with normal spectral displays.

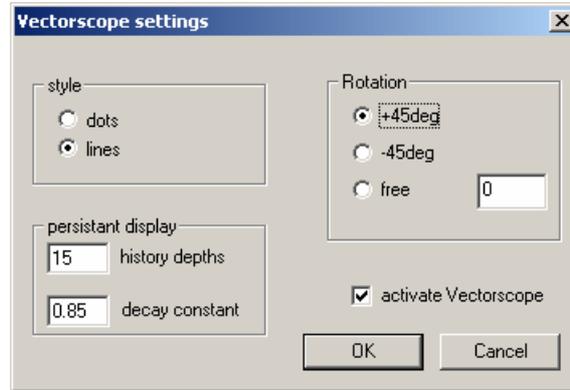


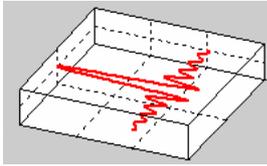
With the channel matrix you can assign all available channels to each vector display. The vectorscope display is freely scalable.



# Dr-Jordan-Design professional digital signal processing

This dialogbox shows the configuration for the Vectorscope.



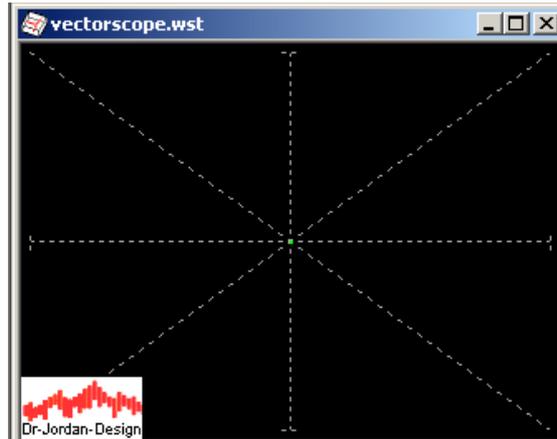


# Dr-Jordan-Design professional digital signal processing

For several signal scenarios you get typical Vectorscope displays. All example displays were generated with no rotation.

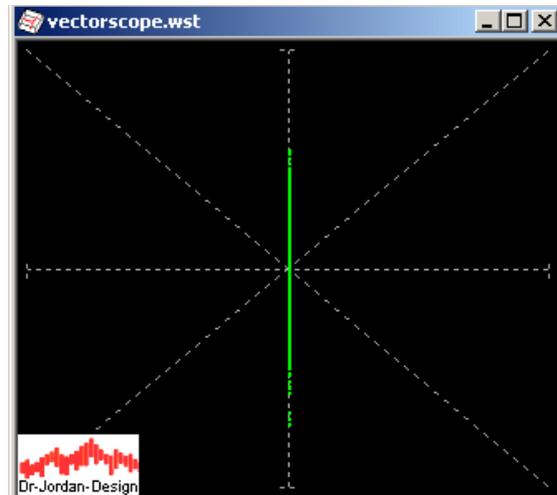
## 1.1 Both channels zero

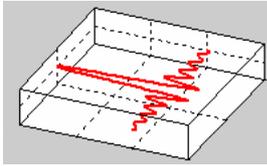
For a zero signal you get a single dot in the middle of the display.



## 1.2 First channel zero

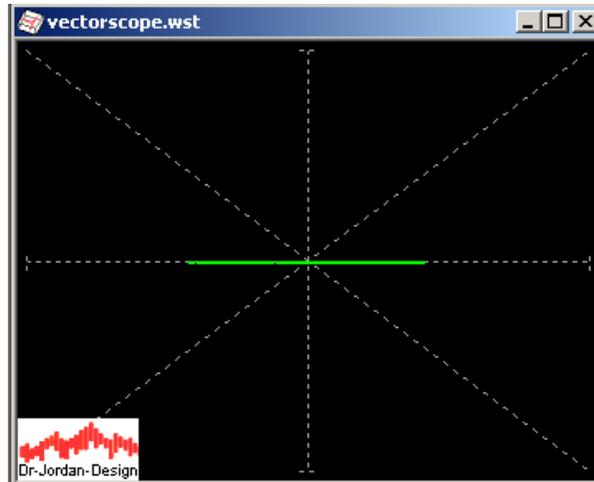
If the first channel is zero, all display dots are on the y-axis.





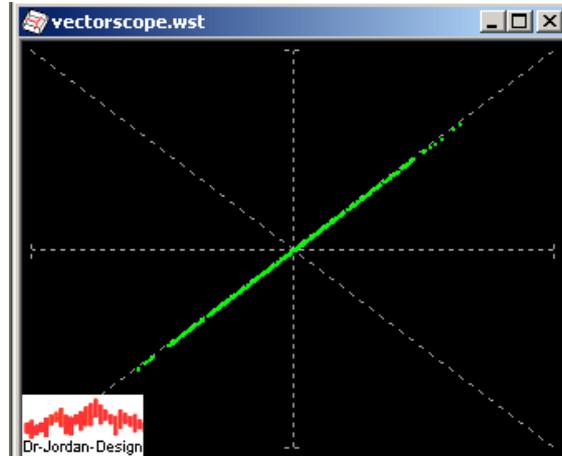
### 1.3 Second channel zero

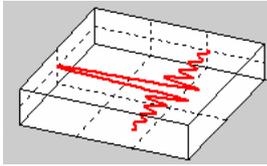
If the second channel is zero, all display dots are on the x-axis.



### 1.4 Mono signal

If both channels are identical, the signal dots are on the diagonal line.

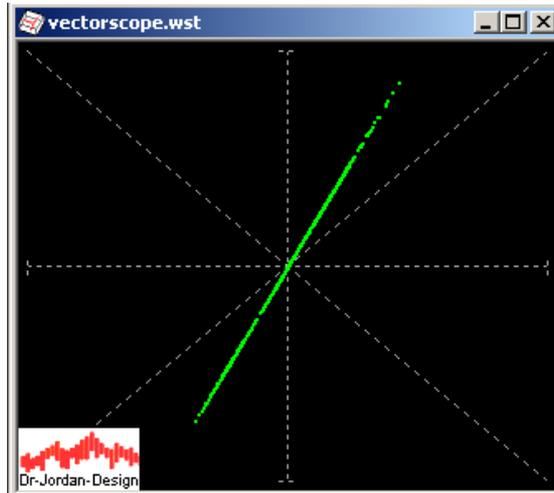




# Dr-Jordan-Design professional digital signal processing

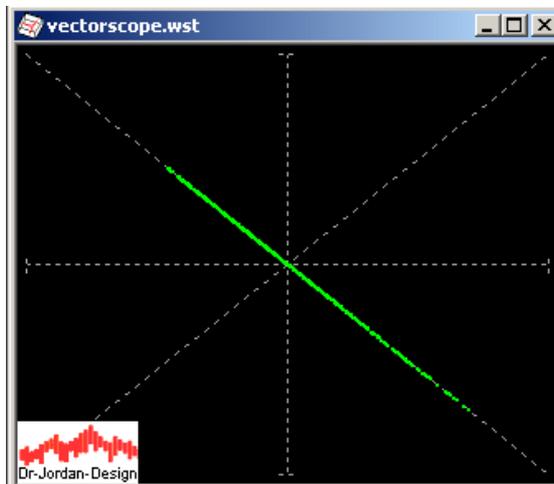
## 1.5 Signal with 3dB level difference

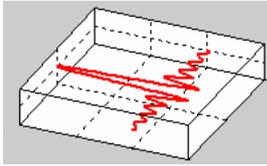
If the level differs between both channels, the signal dots are on a single line with a different angle. The following example has level difference of 3dB between both channels.



## 1.6 Signal with 180 degree phase difference

If both channels have a phase difference of 180 degree, you get the following plot.





## 1.7 Lissajous figures

With sine signals as input you can view the famous Lissajous figures. If the phase shift is exactly 90 degrees, you get a circle. This figure is very sensitive to frequency or phase variations between both channels. Such figures are widely used for e.g. azimuth adjustment of tape recorders.

