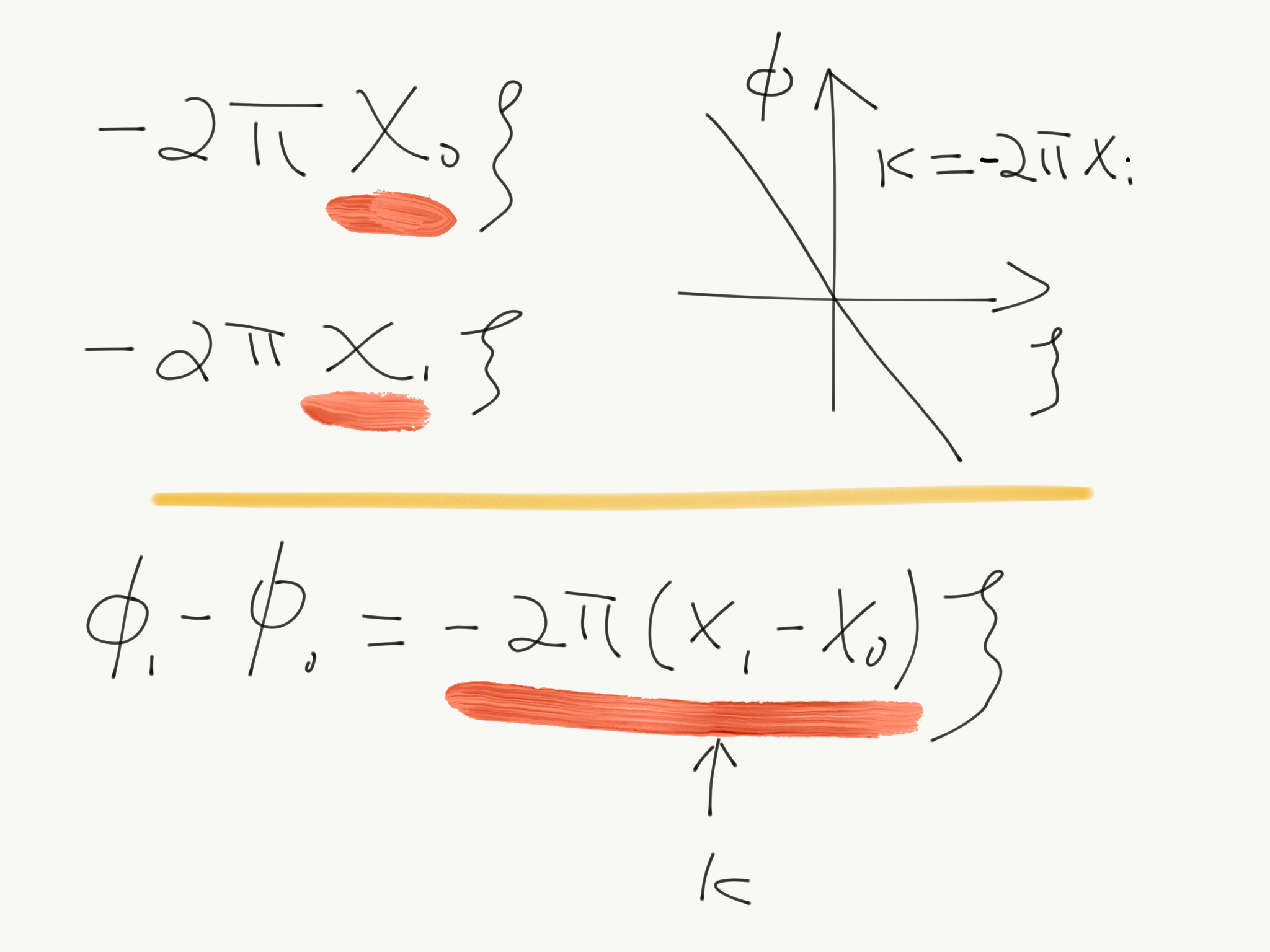
Theoretical Layout

/var/folders/2f/w26sfqd55bx9kgm5csx6d1900000gp/T/com.microsoft.Word/WebArchiveCopyPasteTempFiles/p572

Phase angle and differential phase angle



Relative shift

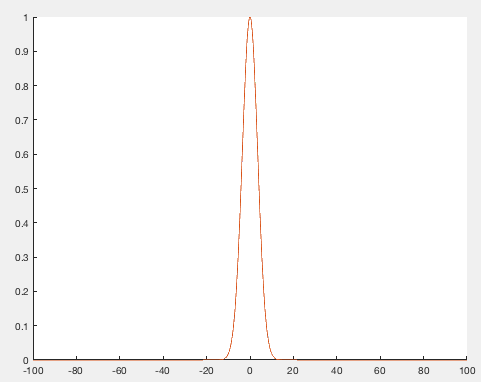
y-axis: differential phase angle

x-axis: FT frequency

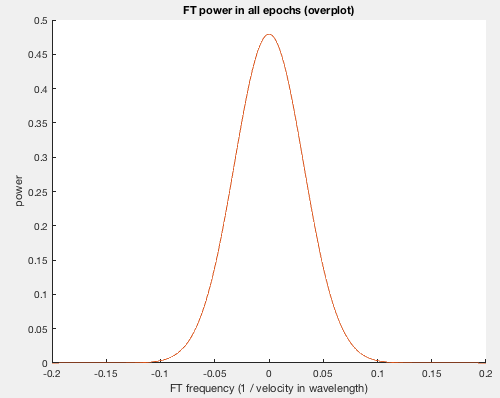
Example

**Gaussian profile**

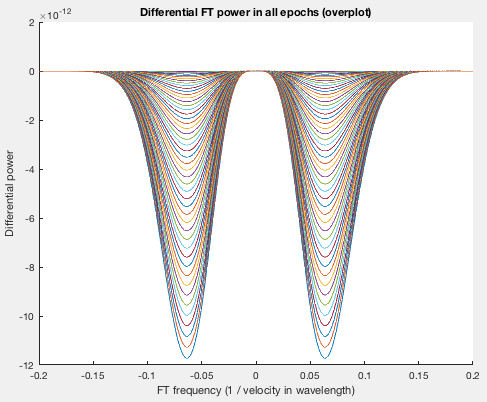
y = exp(-x.^2/5^2)



Overplot the Fourier Transform of 100 shifted Gaussians (shift ranges between -0.003 and 0.003):

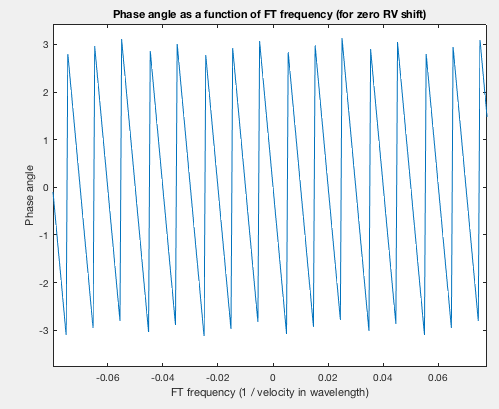
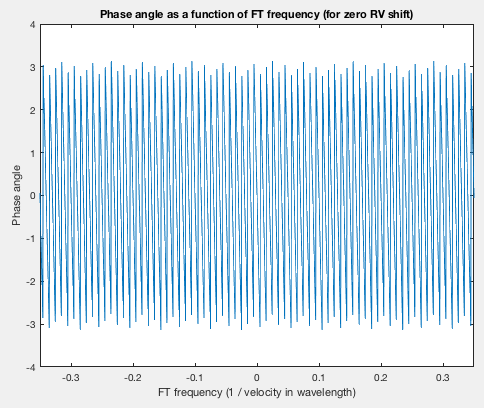


Differential Power:



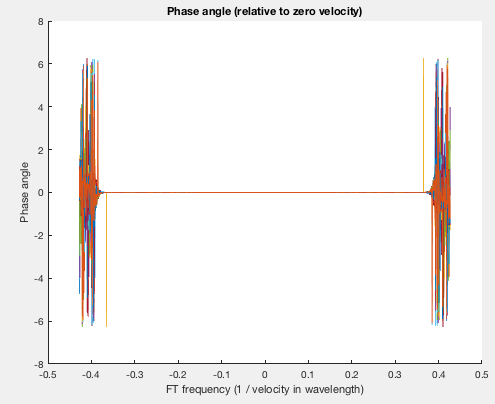
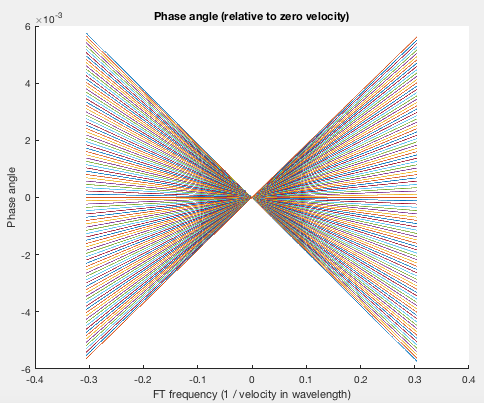
Phase angle:

Zoom-in of left panel



Differential phase angle:

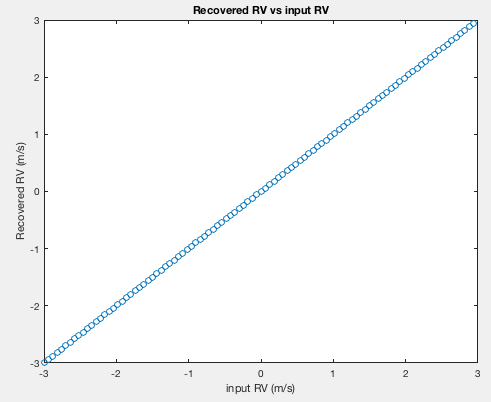
Zoom-out of left panel



Linearity is only valid within a limited frequency range. Why?

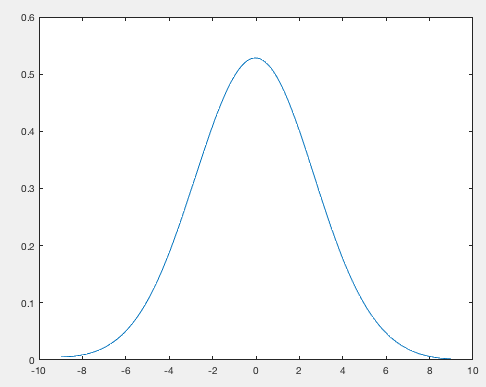
* The range varies with the treatment of the profile, e.g.
  + vs )
  + Subtracting the “background”
  + Apodization?

Results:

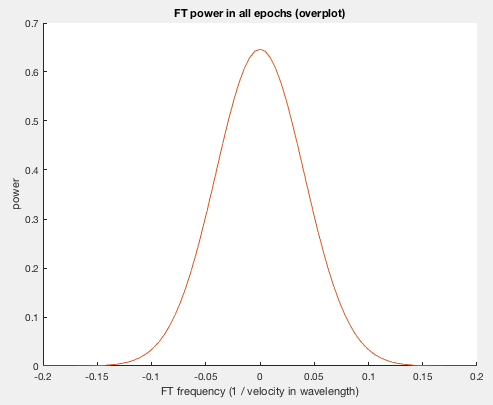


**Simulated profile with line deformation**

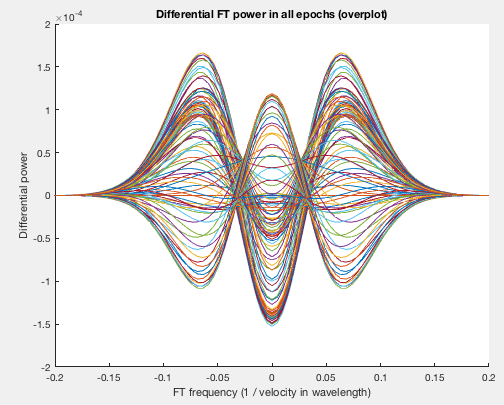
Simulated line profile



FT

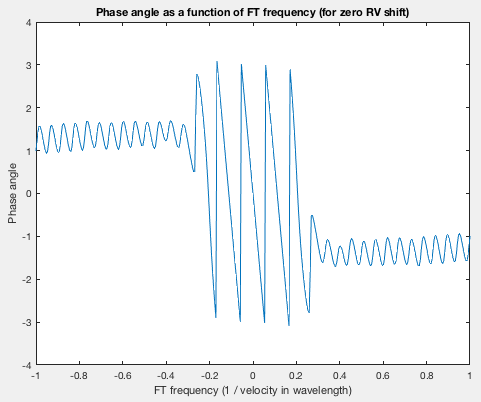
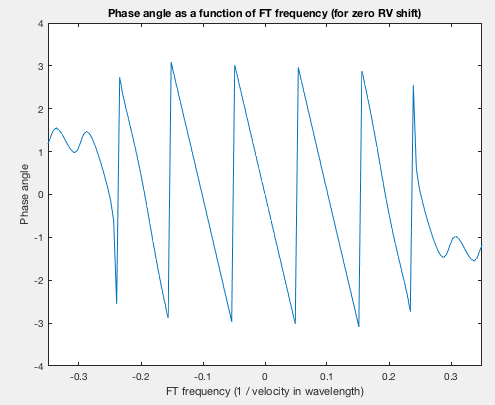


Differential Power:



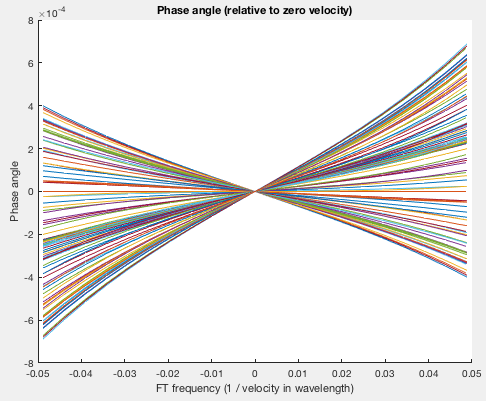
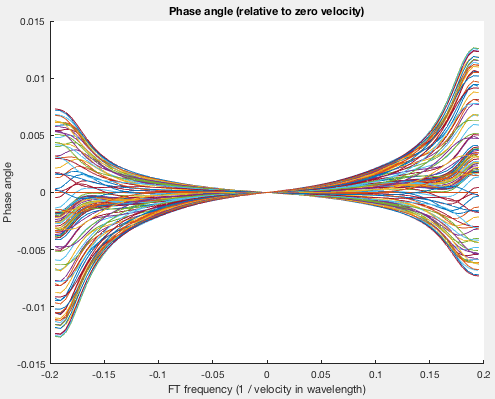
Phase angle:

Zoom-out of left panel



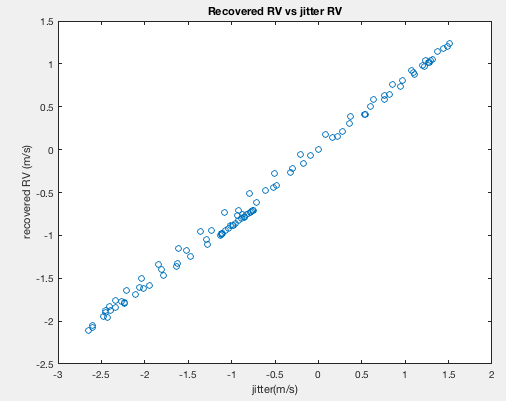
Differential phase angle:

Zoom-in of left panel



Didn’t expect linearity in the case of line deformation (without shift).

Results:



Slope = 0.8070; intercept = -0.0056.