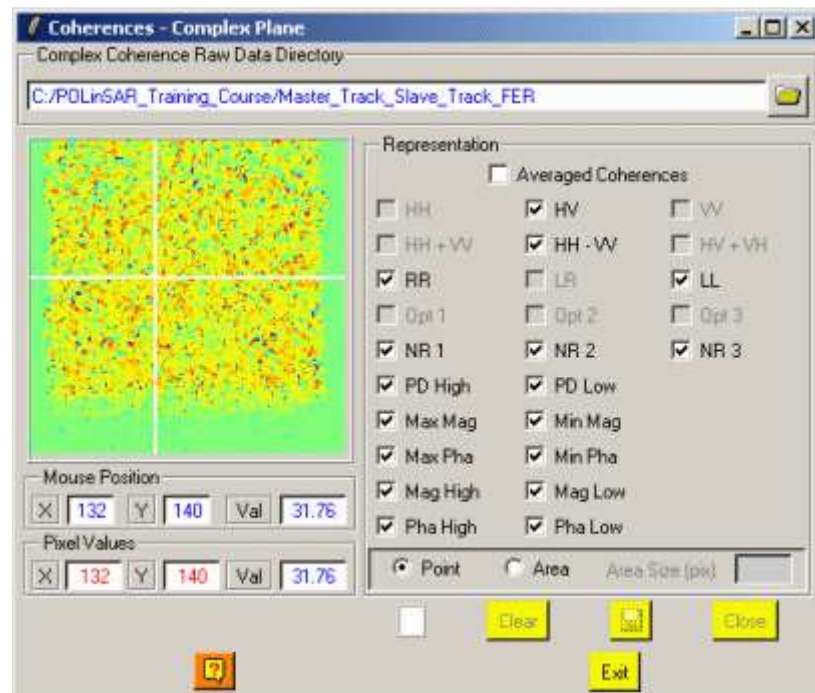


Coherences – Complex Plane



Description:

This Application is used to display both phase and amplitude of the complex coherence inside a unit circle in the complex plane. This is a pixel-by-pixel view and it is an important tool in POLinSAR as it allows to view the variation of both phase and coherence with polarisation.

The selection of points of interest and the results displayed is achieved by the way of an interactive Graphical User Interface.

Comments:

Parameters written in Red can be modified directly by the user from the keyboard.

Complex Coherence Raw Data Directory:

Enter the full path name of the input binary data directory to be analysed.

Once entered, this functionality automatically checks the existence in the considered input directory of the following complex coherence data files:

- [cmplx_coh_HH.bin](#), [cmplx_coh_HV.bin](#), [cmplx_coh_VV.bin](#) : corresponding to the **Linear** representation of the considered complex coherences.
- [cmplx_coh_LL.bin](#), [cmplx_coh_LR.bin](#), [cmplx_coh_RR.bin](#) : Corresponding to the **Circular** representation of the considered complex

coherences.

- [cmplx_coh_HHpVV.bin](#), [cmplx_coh_HHmVV.bin](#), [cmplx_coh_HVpVH.bin](#) : Corresponding to the **Pauli** representation of the considered complex coherences
- [cmplx_coh_Opt1.bin](#), [cmplx_coh_Opt2.bin](#), [cmplx_coh_Opt3.bin](#) : Corresponding to the **Optimal** polarization state representation of the considered complex coherences.
- [cmplx_coh_PDHigh.bin](#), [cmplx_coh_PDLow.bin](#) : Corresponding to the Phase diversity algorithm (Tabb et al.).
- [cmplx_coh_Opt_NR1.bin](#), [cmplx_coh_Opt_NR2.bin](#), [cmplx_coh_Opt_NR3.bin](#): Corresponding to the Numerical Radius algorithm (Colin et al.).
- [cmplx_coh_MaxMag.bin](#), [cmplx_coh_MinMag.bin](#), [cmplx_coh_MaxPha.bin](#), [cmplx_coh_MinPha.bin](#): Corresponding to the Min/Max of Phase/magnitude over coherence boundary.
- [cmplx_coh_maxdiff_PhaLow.bin](#), [cmplx_coh_maxdiff_PhaHigh.bin](#), [cmplx_coh_maxdiff_MagLow.bin](#), [cmplx_coh_maxdiff_MagHigh.bin](#): Corresponding to the max Phase/Magnitude Difference over coherence boundary.

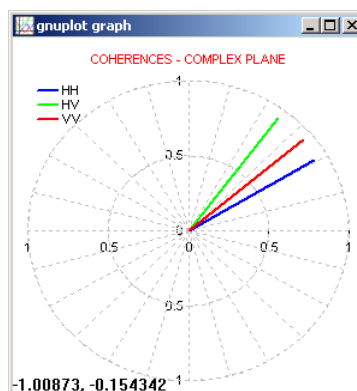
The functionality then updates the array of the corresponding complex coherence possible representations.

Mouse Position:

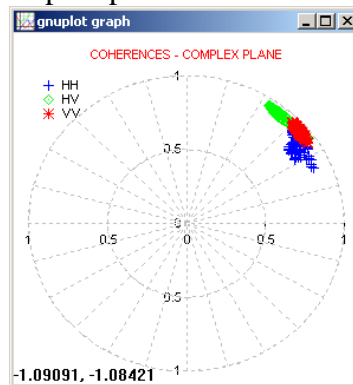
- X, Y** Give the Mouse pointer position in pixels. The Top-Left position corresponds to the (1,1) value and the Bottom-Right position corresponds to the (Nrows, Ncols) value.
- Value** Display the pixel value (Note: this functionality is only valid if the active image is an 8-bits Windows Bitmap image).

Show:

- Point** Select pixel and display both phase and amplitude of the corresponding selected complex coherence inside a unit circle in the complex plane



Area Select pixel and his neighbourhood and display both phase and amplitude of the corresponding selected complex coherence inside a unit circle in the complex plane



Area Size Number of **pixels** used to define the size of the (NxN) window, centred around the selected pixel and that is used to estimate its characteristics metrics.

Graphic Editor:



Toggle selected line contour color (black / white).

Clear

Clear the Display Window.



Save the active Display Window

Close

Close the Display Window

Coherences – Complex Plane Procedure Steps:

- **1** : Enter the Input Data Directory
 - **2** : Select the Complex Coherences to be displayed
 - **3** : Select the Representation Display Format : point or area and enter the Area Size in pixels if necessary
 - **4** : Point on the Pixel using the Mouse and the Cross Lines.
 - **5** : Select the Pixel by clicking on the left Mouse button.
 - **6** : To proceed with another point / area go to step **3** or **4**
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