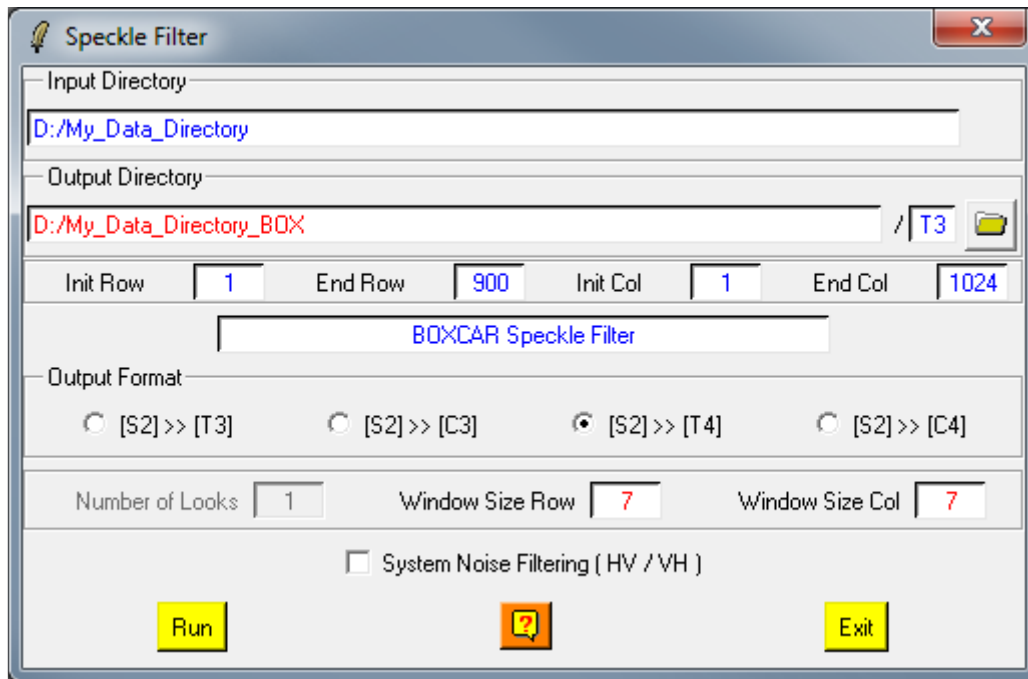


## Speckle Filter



The screenshot shows the 'Speckle Filter' dialog box. It has the following fields and controls:

- Input Directory:** A text field containing 'D:/My\_Data\_Directory'.
- Output Directory:** A text field containing 'D:/My\_Data\_Directory\_BOX' and a folder icon button.
- Init Row:** A text field containing '1'.
- End Row:** A text field containing '900'.
- Init Col:** A text field containing '1'.
- End Col:** A text field containing '1024'.
- BOXCAR Speckle Filter:** A text field containing 'BOXCAR Speckle Filter'.
- Output Format:** Four radio buttons: '[S2] >> [T3]', '[S2] >> [C3]', '[S2] >> [T4]' (selected), and '[S2] >> [C4]'.
- Number of Looks:** A text field containing '1'.
- Window Size Row:** A text field containing '7'.
- Window Size Col:** A text field containing '7'.
- System Noise Filtering (HV / VH):** An unchecked checkbox.
- Buttons:** 'Run' (yellow), a help icon (orange square with a question mark), and 'Exit' (yellow).

### Description:

This function is used to apply a Polarimetric Speckle filtering on polarimetric raw binary data.

The different proposed polarimetric Speckle Filters are :

- Box Car filter
- Gauss filter
- IDAN filter
- Refined Lee filter.
- PWF (Polarimetric Whitening Filter)

According to the input data format, indicated in the widget, different compatible output data formats are proposed according the following table:

Input Data Format	Output Data Format
(2x2) Sinclair matrix [S2]	[T3], [T4], [C3], [C4]
(3x3) Coherency matrix [T3]	[T3]
(4x4) Coherency matrix [T4]	[T4]
(2x2) Covariance matrix [C2]	[C2]
(3x3) Covariance matrix [C3]	[C3]
(4x4) Covariance matrix [C4]	[C4]
Dual Polarimetric Elements (Sxx, Sxy)	[C2]
Intensities (Ixx, Ixy)	(Ixx, Ixy)

## Comments:

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

## Input/Output Arguments:

<b>Input Directory</b>	Indicates the location of the considered <b>Main Directory (MD)</b> containing the polarimetric data sets to be filtered.
<b>Output Directory</b>	Indicates the location of the filtered data output directory. The default value is set automatically to : <b>Main Directory_XXX / YY.</b> where <b>XXX</b> is associated with the selected Speckle Filter (BOX, GSS, IDAN LEE) and where <b>YY</b> is associated with the Output Data Format ( <b>C2, C3, C4, T3</b> or <b>T4</b> ).

## Output Image Number of Rows/Columns:

The output image numbers of rows and columns are initialised to the input data set dimensions.

Users wishing to process a sub-part of the initial image can modify the **Init** and **End** values of the converted images rows and columns.

Note: init and end values have to remain within the range defined by the input image dimensions.

## Filtering Parameters:

<b>Window size</b>	Users have to set the size of the (N*N) sliding window used to compute the local estimate of the average matrix. The default value of N is set to <b>7</b> .
<b>Number of Looks</b>	Users have to set the Input data equivalent number of looks used to compute the a priori input speckle noise variance. The default value of N is set to <b>1</b> .

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*Note : The IDAN (Intensity Driven Adaptive Neighbourhood) speckle filter functionality is a contribution by G. Vasile and E. Trouve from LISTIC – Polytech'Savoie.*