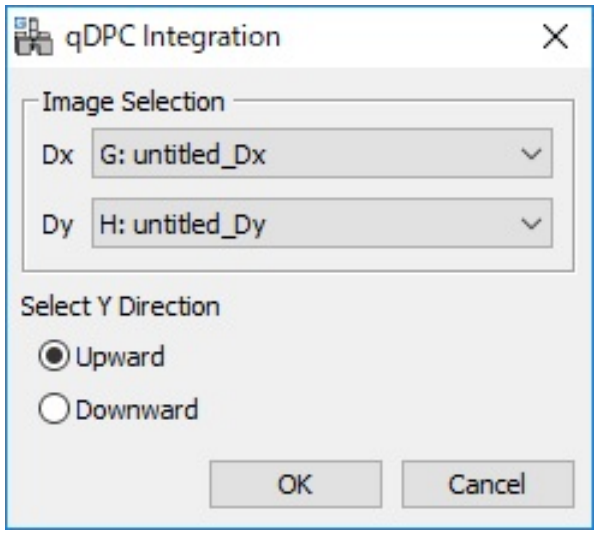
Brief Instruction

qDPC calculates phase distribution from DPC signals

Menu	Description	Note
DCT…	Uses Discrete Cosine Transform	#1
Extended FFT…	Uses Extended FFT	
Direct Integration…	Uses numerical integration	
FFT1 (Complex Sum)…	Uses FFT to solve the complex sum of the DPC signals	#2
FFT2 (Poisson)…	Uses FFT to solve Poisson equation for the DPC signals	#3
Prepare DPC signal…	Calculate the DPC signals from four signals of a segmented detector	
Rotate DPC signal…	Rotates the DPC signals to the scan direction	
Adjust DPC signal…	Adjusts the DPC signals for a zero-level and/or signal slope	
Field Vector Map	Draws a field vector map.	

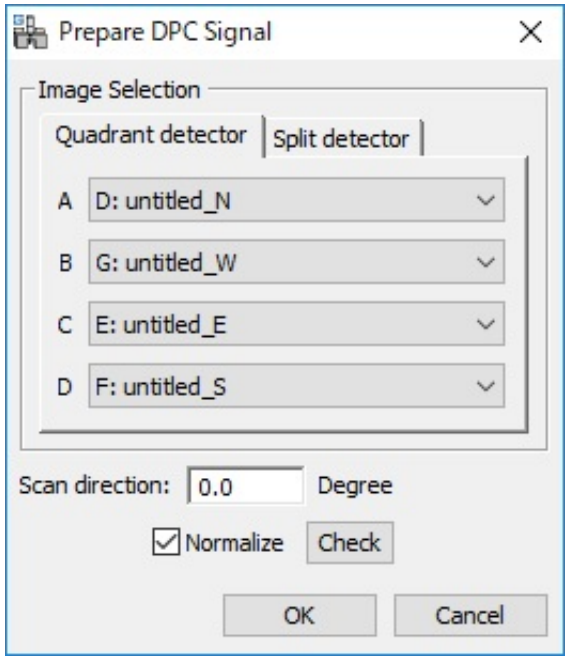


[1] Ishizuka A., Oka M., Ishizuka I., Seki T and Naoya Shibata N. Microscopy **66**, 406 (2017)
[2] Close R., Chen Z., Sbibata N. and Findlay S.D. Utramicroscopy **159**, 124 (2015)
[3] Lazic I., Bosch E.G.T and Lazar S, Utramicroscopy **160**, 265 (2016)

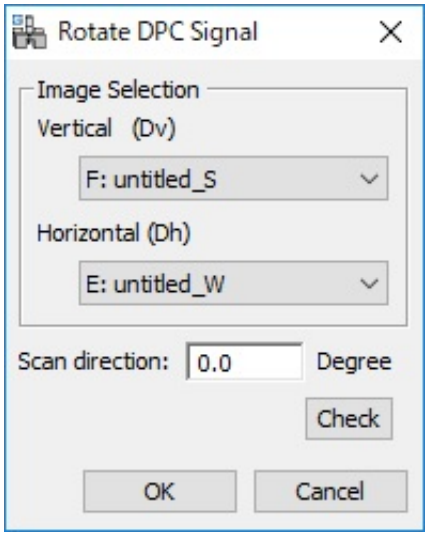
The dialog on the left will appear for the commands to retrieve the phase distribution from DPC signals. Here, you can change the y-direction.

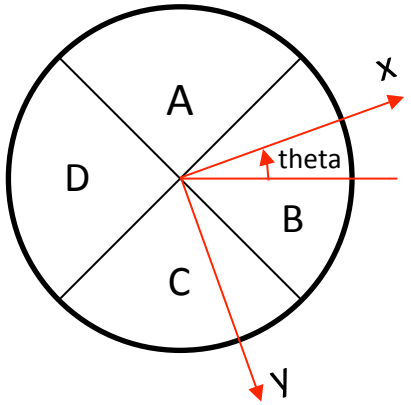
Field Vector Map sub-menus

Prepare DPC Signal dialog



Rotate DPC Signal dialog





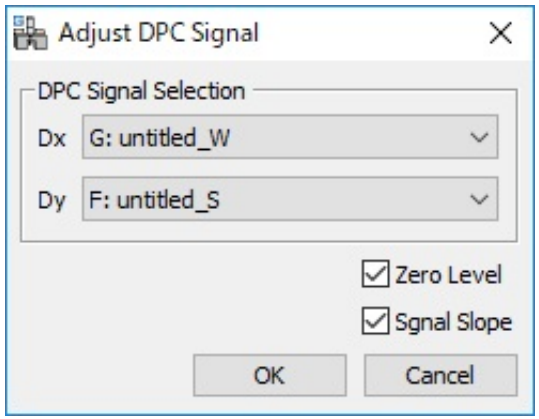
D_H= B - D

D_V = C - A

D_X = cos(theta)xH – sin(theta)xV

D_Y= cos(theta)xV + sin(theta)xH

Adjust DPC Signal dialog



When there is a rectangle ROI on one of the DPC signals, the DPC signals are adjusted based on the signals with in the ROI. Otherwise, the DPC signals are adjusted based the whole area.

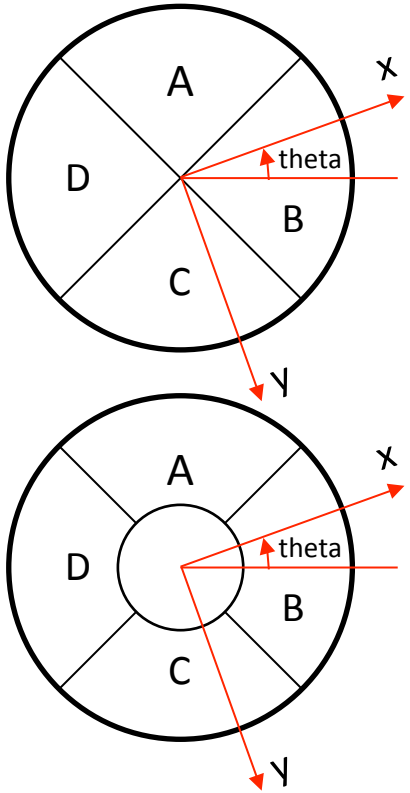
Using the ROI placed at a homogeneous area, you can adjust the DPC signals, even when there is, for example, an interface in the image.

Appendix

Relation between scan-direction and detector

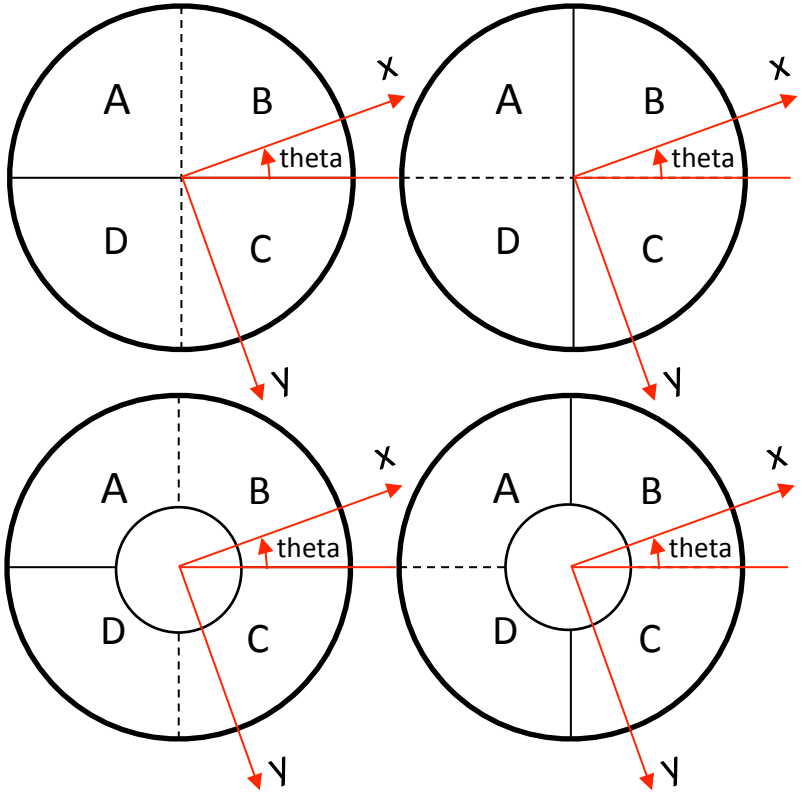
$D_X = \cos(\text{theta}) \times D_H - \sin(\text{theta}) \times D_V$
$D_Y = \cos(\text{theta}) \times D_V + \sin(\text{theta}) \times D_H$

Quadrant detector



$D_H(Q) = B - D$
$D_V(Q) = C - A$

Split detector



$D_V(S) = (C+D) - (A+B)$ $D_H(S) = (B+C) - (A+D)$