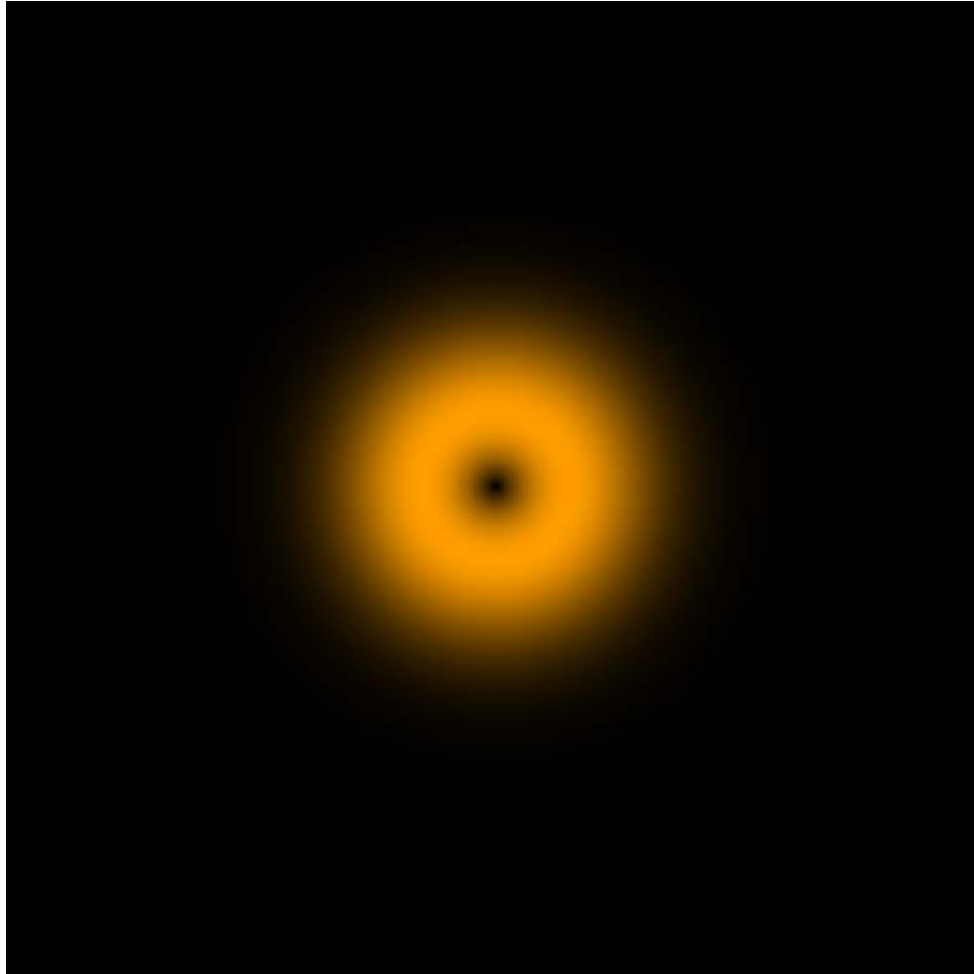


Programming a Detector Summing Square Amplitude on Optical Axis

Abstract



By means of the example, it is intended to illustrating the access on field values in a Programmable Detector via source code. The programmable detector calculates the sum of all squared amplitudes on the optical axis including all field components. As an example, the detector is applied on a donut mode, which is modeled as the combination of a HG_{01} and a HG_{10} Hermite Gaussian modes.

Task Description & Result

Source Code Editor

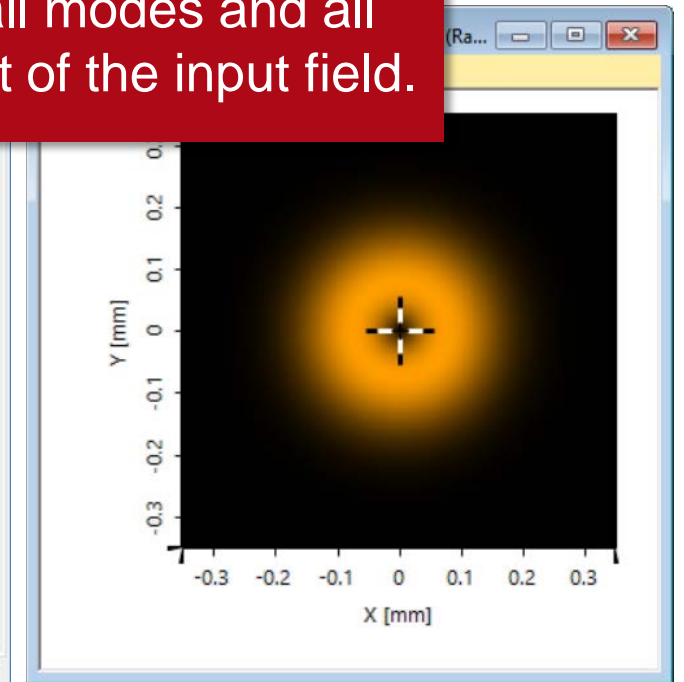
```
1  /**/  
9  DetectorResultObject[] detectorResults = new DetectorResultObject[1];  
10  
11  double summedIntensity = 0;  
12  
13  for (int i = 0; i < InputField.Count; i++) {  
14      ComplexAmplitude currentField = InputField[i];  
15      Vector centerPoint = CoordinateTransformations.PointFromPhysicalToPixelCoordinates(new  
16      if (currentField.IsGloballyPolarized) {  
17          summedIntensity += currentField.Field[centerPoint.X, centerPoint.Y].Norm();  
18      }  
19      else {  
20          summedIntensity += currentField.FieldX[centerPoint.X, centerPoint.Y].Norm();  
21          summedIntensity += currentField.FieldY[centerPoint.X, centerPoint.Y].Norm();  
22      }  
23  }  
24  
25  detectorResults[0] = new DetectorResultObject(new PhysicalValue(summedIntensity, PhysicalProperty.E)  
26  
27  return detectorResults;
```

Detector Results

	Detector	Sub - Detector	Result
1	Programmable Detector #600 after Donut Mode (Radial Polarization; $\lambda = 594 \text{ nm}$) #0 (-) (My Detector) (Classic Field Tracing)	Summed Squared Amplitudes on Axis	$2.9916\text{E-}33 \text{ (V/m)}^2$

Detector Results

Task:
Calculate the sum of square
amplitude on optical axis,
regarding to all modes and all
field component of the input field.



Document Information

title	Programming a Detector Summing Square Amplitude on Optical Axis
document code	CZT.0054
version	1.0
toolbox(es)	Starter Toolbox
VL version used for simulations	7.4.0.49
category	Feature Use Case
further reading	<ul style="list-style-type: none">- How to Work with the Programmable Detector and Example (Minimum and Maximum Wavelengths)- Programming a Degree of Coherence Detector