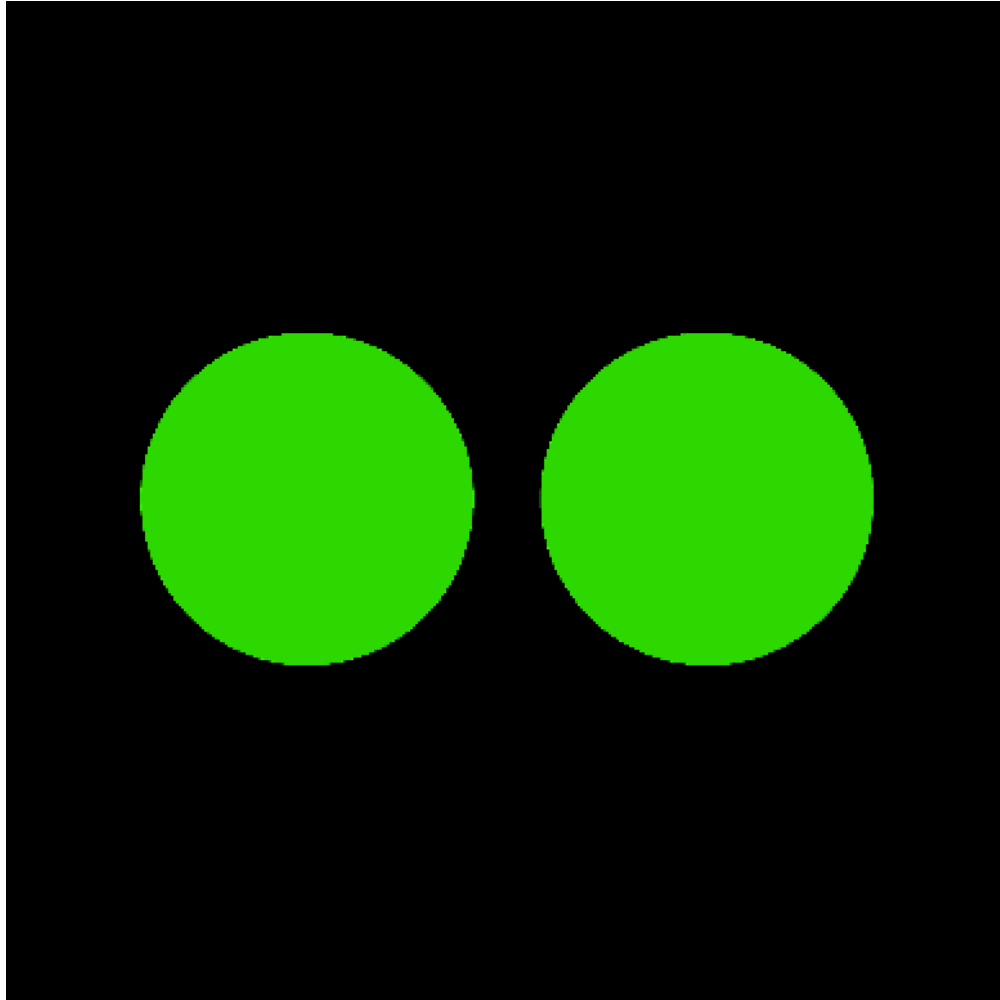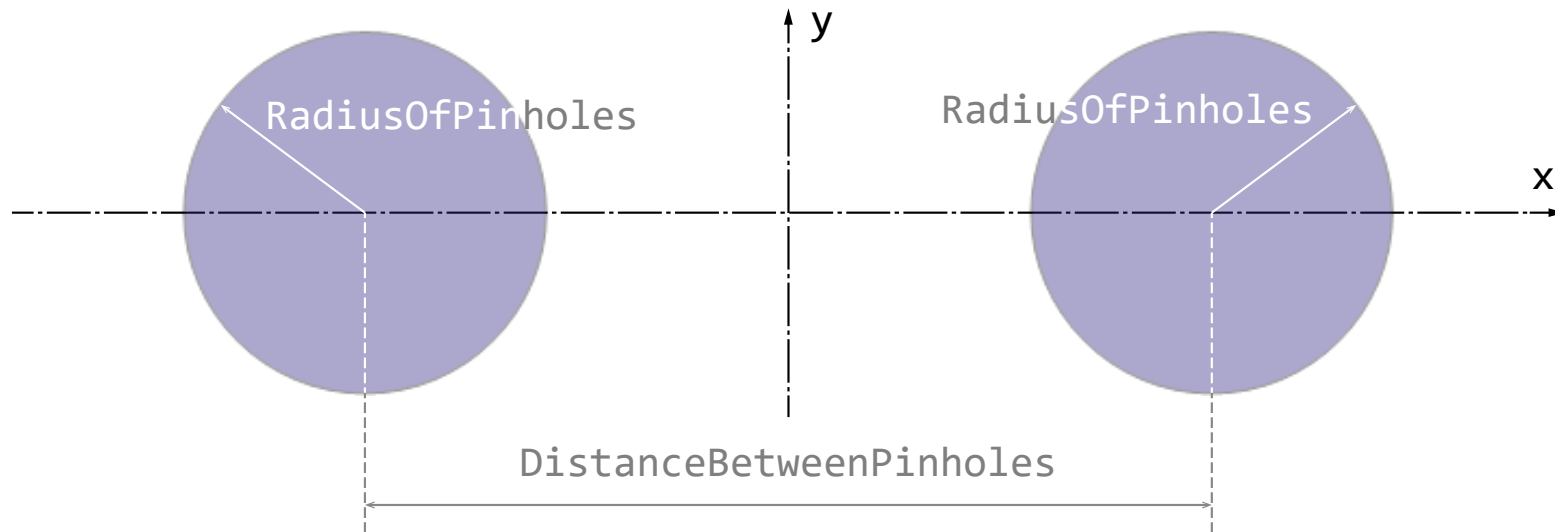# Programming a Double Pinhole Transmission Function
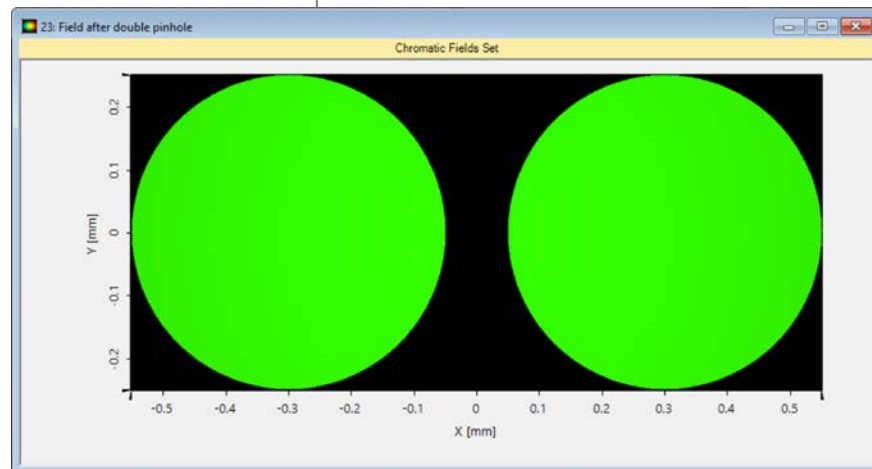
Abstract

In this programming example we illustrate how to code a transmission function that imitates an opaque screen punctured by two round holes. The snippet can be also be used as a source, if the interaction between the incoming field and the perforated screen is not of interest (for instance, if the apertures for the two pinholes are always assumed to be completely filled by the input field). Please bear in mind that there may be more efficient ways to simulate such an optical setup; the main purpose of this document is to act as a programming example.

Programming a Transmission Function for a Double Pinhole

RadiusOfPinholes

RadiusOfPinholes

y

x

DistanceBetweenPinholes

Task:
Generate a transmission function for two circular pinholes along the *x* axis.

Hint: bear in mind that in a Programmable Function the user must determine the necessary sampling!

23: Field after double pinhole

Chromatic Fields Set

Y [mm]

X [mm]

Main Function

```
double distance1 = Math.Sqrt(((x + DistanceBetweenPinholes / 2) *
    (x + DistanceBetweenPinholes / 2)) + (y * y));
double distance2 = Math.Sqrt(((x - DistanceBetweenPinholes / 2) *
    (x - DistanceBetweenPinholes / 2)) + (y * y));
if ((distance1 < RadiusOfPinholes) || (distance2 < RadiusOfPinholes))
{
    realPart = 1.0;
}
return new Complex(realPart, 0.0);
```

Document Information

title	Programming a Double Pinhole Transmission Function
document code	CZT.0029
version	1.0
toolbox(es)	Starter Toolbox
VL version used for simulations	7.4.0.49
category	Feature Use Case
further reading	- How to Work with the Programmable Function & Example (Cylindrical Lens) - Programming an Axicon Transmission Function