

Console

Enter the number of sequential elements(lenses) 16

Enter the focal lengths of sequential elements in order

--> 23

--> -12

--> 21

--> 9

--> 5

--> -6

--> -1

--> 4

--> 34

--> 39

--> -32

--> 3

--> 7

--> -2

--> 23

--> -7

Enter the input angle(in radian)0.04

Enter the input height0.21

Enter the object distance21

Enter the distance between lenses in order

--> 12

--> 7

--> 4

--> 9

--> 17

--> 21

--> 34

--> 23

--> 41

--> 11

--> 9

--> 2

--> 1

--> 28

--> 12

The lens matrices are

1. -0.0434783

0. 1.

1. 0.0833333

0. 1.

1. -0.047619

0. 1.

1. -0.1111111

0. 1.

1. -0.2
0. 1.

1. 0.1666667
0. 1.

1. 1.
0. 1.

1. -0.25
0. 1.

1. -0.0294118
0. 1.

1. -0.025641
0. 1.

1. 0.03125
0. 1.

1. -0.3333333
0. 1.

1. -0.1428571
0. 1.

1. 0.5
0. 1.

1. -0.0434783
0. 1.

1. 0.1428571
0. 1.

The image distance from the last lens of cascade is

-7.4486745

The image matrices are

1. 0.
-241.5 1.

1. 0.

-11.457627 1.

1. 0.
-152.46 1.

1. 0.
9.5493015 1.

1. 0.
0.4949285 1.

1. 0.
-4.4003606 1.

1. 0.
-0.9621217 1.

1. 0.
4.5167605 1.

1. 0.
-40.500087 1.

1. 0.
74.788162 1.

1. 0.
-64.213249 1.

1. 0.
3.1281809 1.

1. 0.
0.9715909 1.

1. 0.
-0.0280112 1.

1. 0.
128.21058 1.

1. 0.
-7.4486745 1.

The object distance matrices are

1. 0.
21. 1.

1. 0.
253.5 1.

1. 0.
18.457627 1.

1. 0.
156.46 1.

1. 0.
-0.5493015 1.

1. 0.
16.505071 1.

1. 0.
25.400361 1.

1. 0.
34.962122 1.

1. 0.
18.48324 1.

1. 0.
81.500087 1.

1. 0.
-63.788162 1.

1. 0.
73.213249 1.

1. 0.
-1.1281809 1.

1. 0.
0.0284091 1.

1. 0.
28.028011 1.

1. 0.

-116.21058 1.

The composite matrix for whole cascade of lenses

-150775.83 -1071.5777
-6.134D-11 -0.0000066

Angular Magnification by cascade of lenses is

-150775.83

Spatial Magnification by cascade of lenses is

-0.0000066

alpha_out is

-6256.0647

x_out is

-0.0000014