

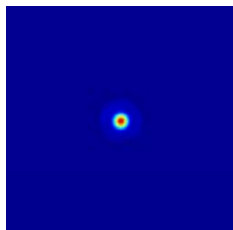
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1 %LightPipes Simulation with LightPipes for Matlab
2 %March 2014. F.A. van Goor.
3 %laser.m
4 %Laser example.
5
6 clear all;
7
8 m=1;
9 nm=1e-9*m;
10 micron=1e-6*m;
11 mm=1e-3*m;
12 cm=1e-2*m;
13 mrad=1e-3;
14
15 lambda=10.6*micron; %wavelength CO2 laser
16 size=32*mm;
17 N=300;
18 f1=5*m;
19 R=0.9;
20 f2=500000*m;
21 L=30*cm;
22 n=50;
23 tx=0.0*mrad; ty=0.0*mrad;
24 D=4*mm;
25 Isat=100;
26 alpha0=4.0;
27 Lgain=30*cm;
28
29 h1=figure('Position',[20 100 1492 462]);
30
31 F=LPEndin(size,lambda,N);
32 F=LPEndinRandomIntensity(8,F);
33 F=LPEndinRandomPhase(13,1,F);
34 Power=zeros(n);
35 rt=zeros(n);
36 for i=1:n
37     rt(i)=i-1;
38     F=LPEndinCircAperture(D/2,0,0,F);
39     F=LPEndinGain(Isat,alpha0,Lgain,F);
40     F=LPEndinLensForward(f1,L,F);
41     F=LPEndinTilt(tx,ty,F);
42     F=LPEndinLensForward(f2,L,F);
43     F=LPEndinInterpol(size,N,0,0,0,1,F);
44     F=LPEndinConvert(F);
45     F=LPEndinIntAttenuator(R,F);
46     Fout=LPEndinIntAttenuator(1-R,F);
47     [F0,Power(i)]=LPEndinNormal(F);
48     Iout=LPEndinIntensity(2,Fout);
49     if i<=10
50         figure(h1);
51         subplot(2,5,i);
52         imagesc(Iout);
53         Str=sprintf('i =%2d',rt(i))
54         title(Str);
55         axis off;axis equal;
56     end
57 end
58 figure(2);
59 plot(rt,Power);
60 ylabel ('Power [a.u.]');

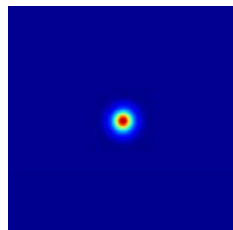
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61 xlabel('i');
62 figure(3);
63 surf(Iout, 'FaceColor', 'interp', ...
64     'EdgeColor', 'none', ...
65     'FaceLighting', 'phong');
66 axis tight; axis off;
67 view(-50, 30);
68 camlight left;
69
```

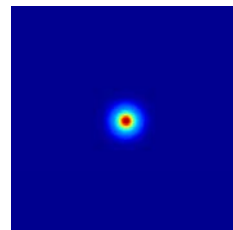
$i = 0$



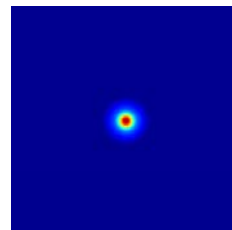
$i = 1$



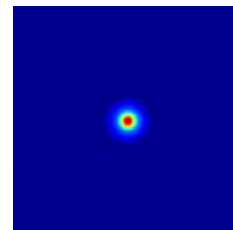
$i = 2$



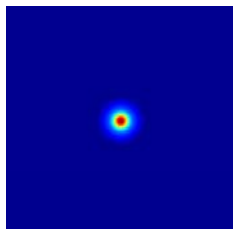
$i = 3$



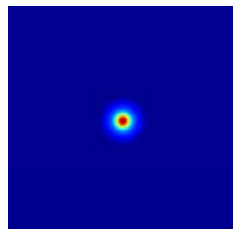
$i = 4$



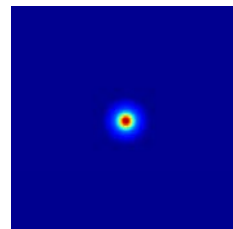
$i = 5$



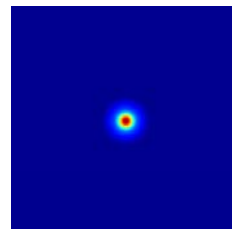
$i = 6$



$i = 7$



$i = 8$



$i = 9$

