RFOFO Studies

R B Palmer

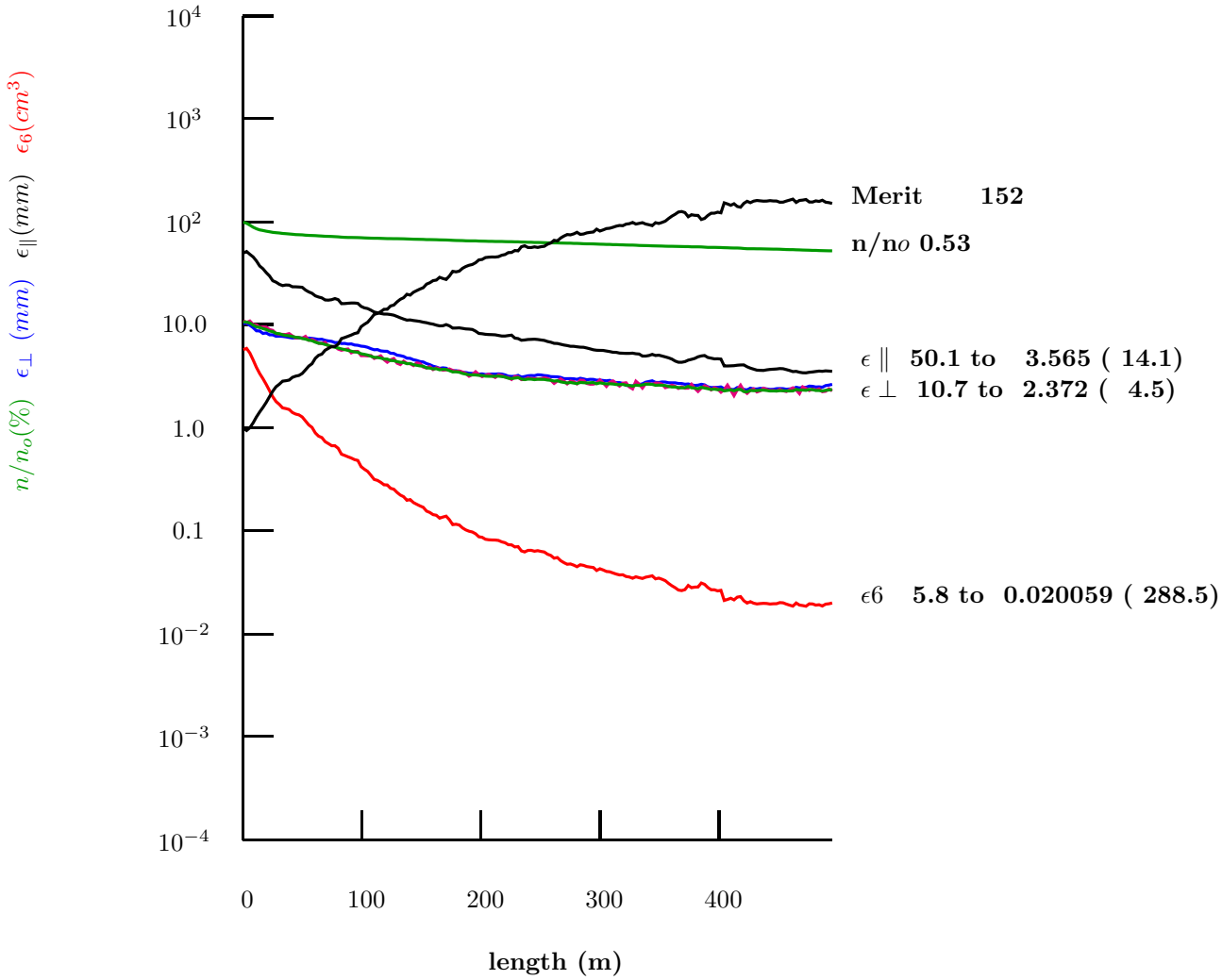
2nd talk FNAL 11/22/02

1. Turn scattering abd Straggling on and off
2. Try Cylindrical Absorber

With straggle and scatter for comparison

60deg wedge nogap acc11 tilts fs2 33m RFOFO 100deg s&s (2.38 ng3a)

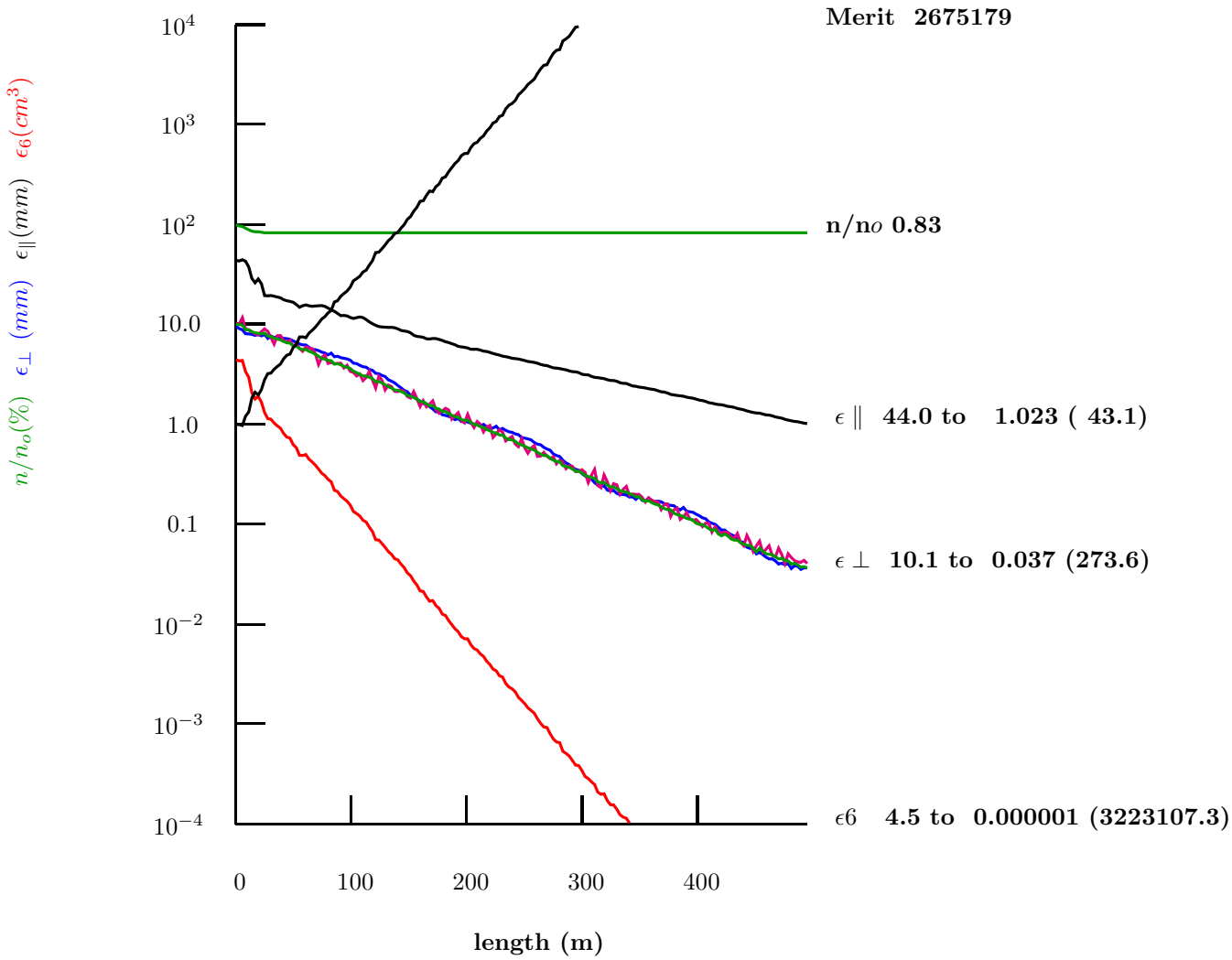
n/n = 527 / 1000



No straggle and scatter

nogap acc11 tilts fs2 33m RFOFO 100deg s&s (2.41 Scott)

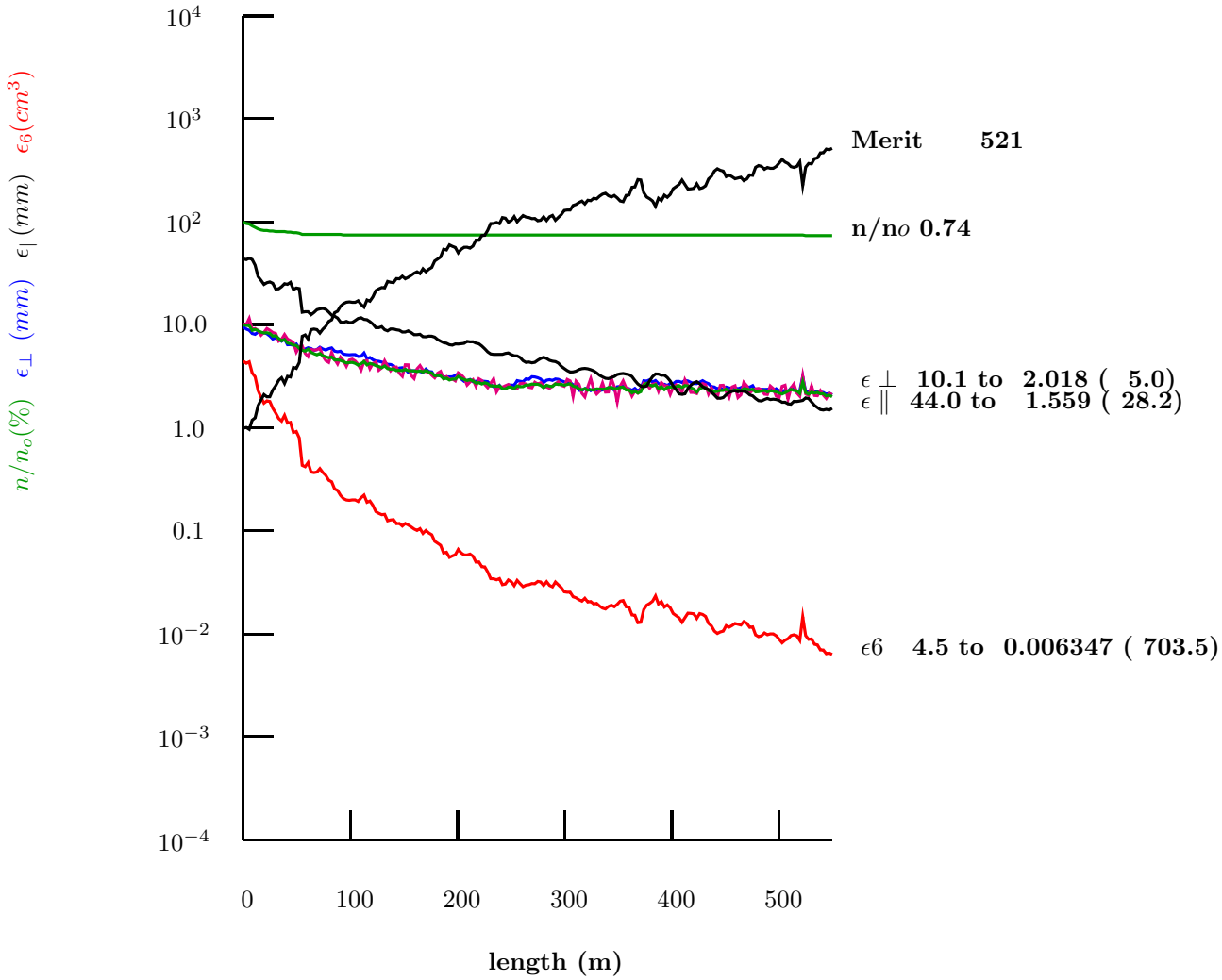
n/n = 83 / 100



No straggle

nogap acc11 tilts fs2 33m RFOFO 100deg no st (2.41 scot4)

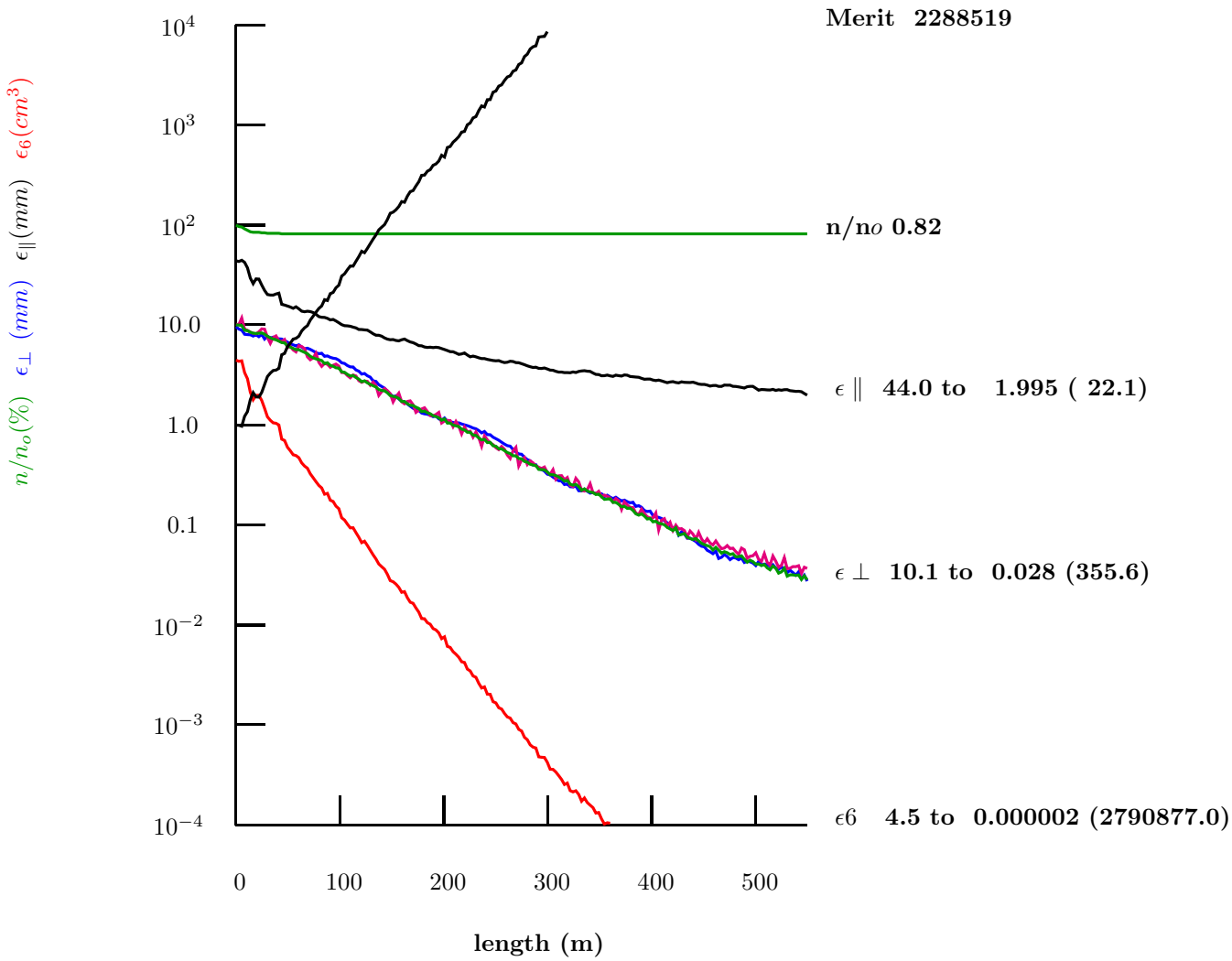
n/n = 74 / 100



No scatter

nogap acc11 tilts fs2 33m RFOFO 100deg no scat (2.41 scot3)

n/n = 82 / 100

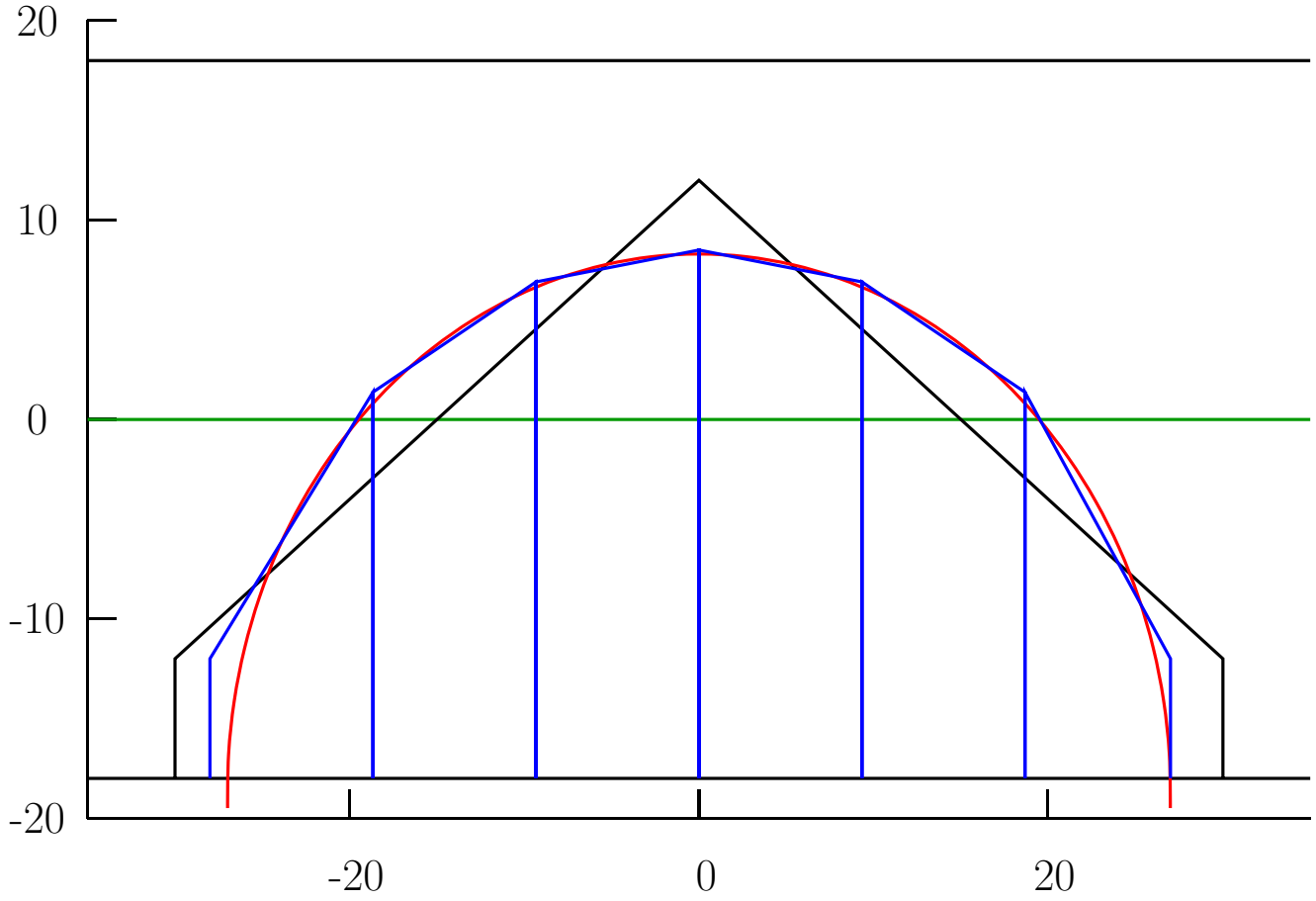


Summary

	len m	trans %	$\epsilon_\perp$ mm	$\epsilon_\parallel$ mm	ϵ_6 cm^3	merit
scat and straggle	495	53	2.4	3.6	0.020	**152**
no scat or straggle	550	83	.037	1.02	0.000001	**2670000**
no straggle	550	74	2.02	1.56	0.006	**521**
no scatter	550	82	.028	1.99	.0000002	**2288000**

- **straggling has very little effect on transverse cooling**
- **scattering has only moderate effect on long cooling**
- **i.e. less mixing than expected**

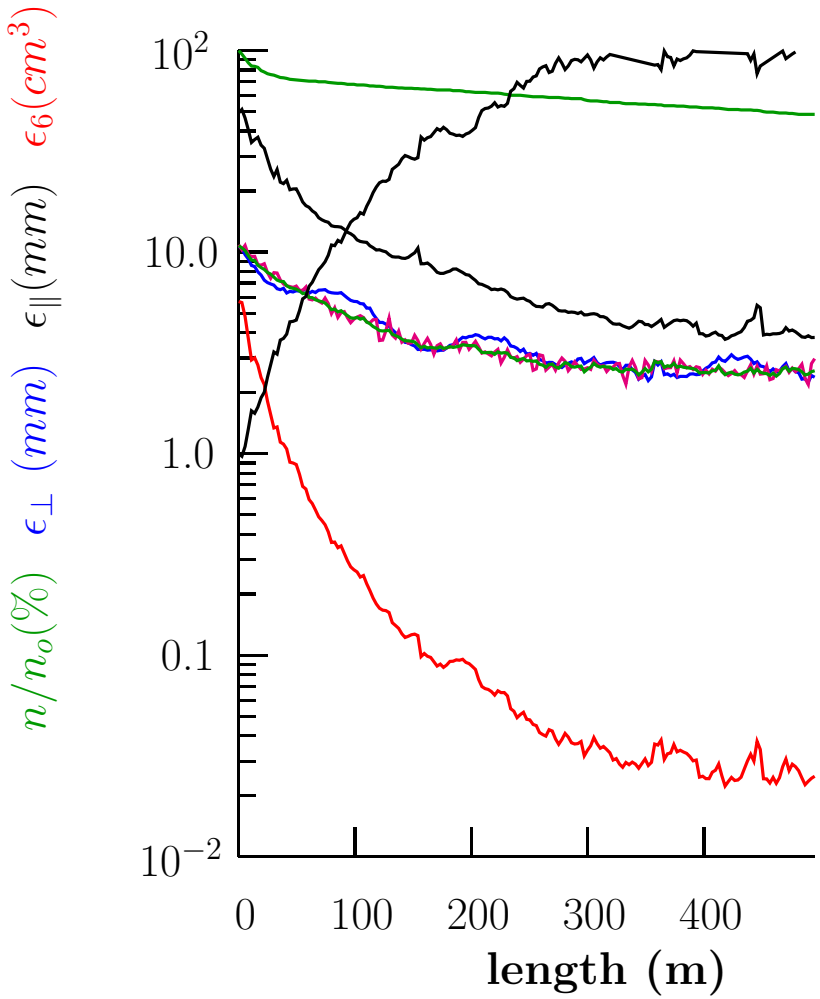
Cylindrical absorber



ICOOL of cylindrical Absorber

nogap acc11 tilts fs2 33m RFOFO 100deg s&s (2.41 cyld)

n/n = 193 / 400



Merit 109

n/no 0.48

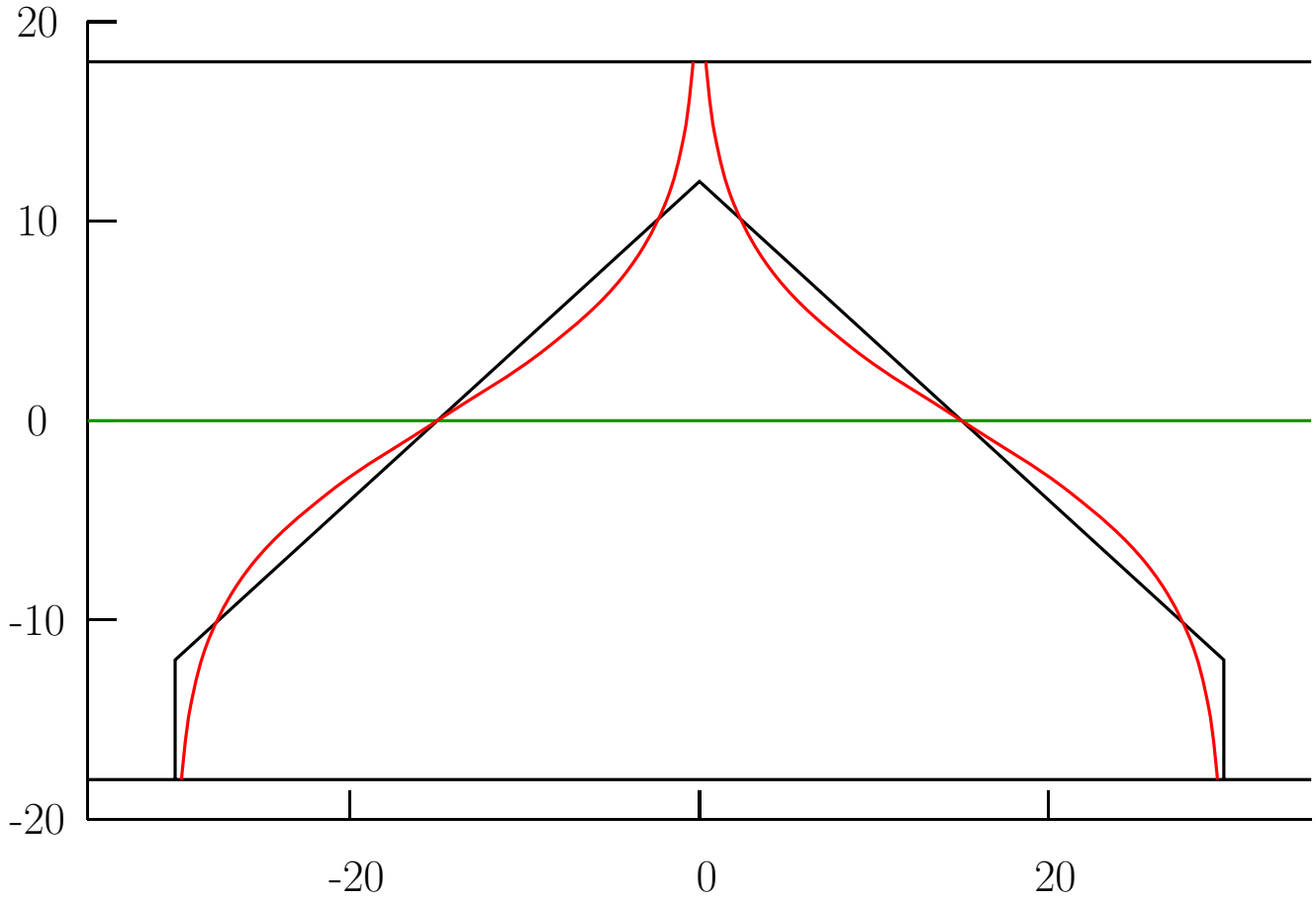
$\epsilon \parallel$ **49.1 to 3.775 (13.0)**

$\epsilon \perp$ **10.8 to 2.581 (4.2)**

$\epsilon 6$ **5.7 to 0.025143 (226.3)**

Summary

	len m	trans %	$\epsilon_\perp$ mm	$\epsilon_\parallel$ mm	ϵ_6 cm^3	max Q	merit
House Wedge							
final	495	53	2.4	3.6	0.020	0	**152**
initial			10.7	50.1	5.787		
ratio			4.5	14.1	288.5		
Cylindrical Wedge							
final	495	48	2.6	3.8	0.025	0	**109**
initial			10.8	49.1	5.690		
ratio			4.2	13.0	226.3		

- **Realistic cylinder worse than House shape**
- **But not much worse**
- **Probably acceptable**

Is this better than House?