Thermal Radiation of Hot Electrons

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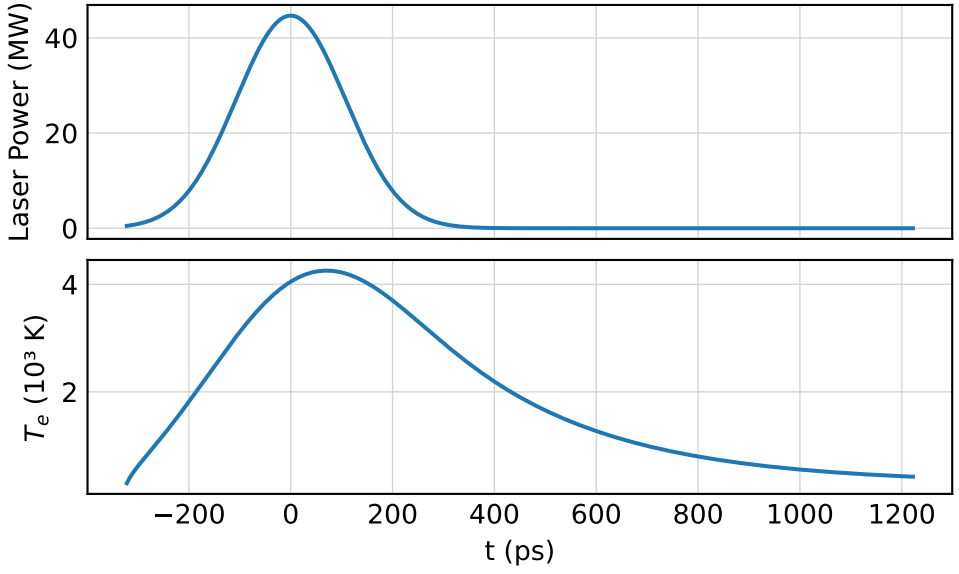
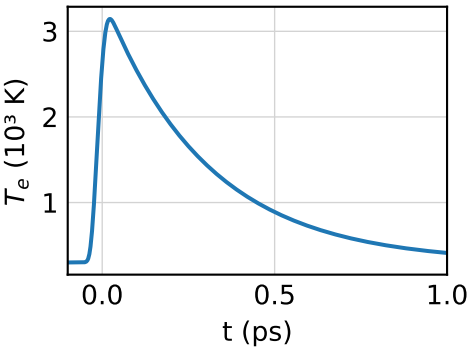
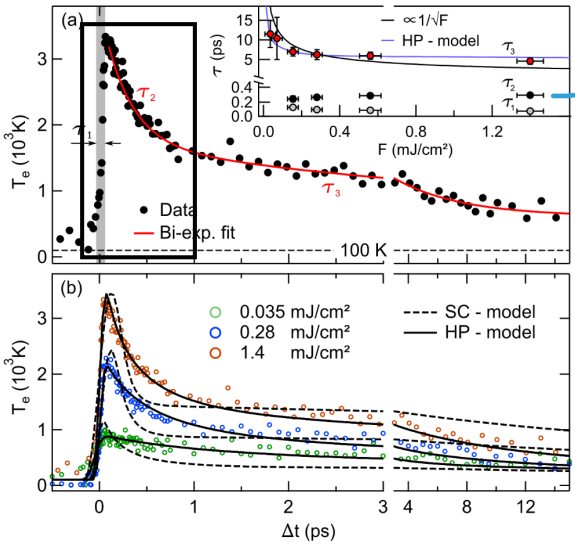
05.05.2025

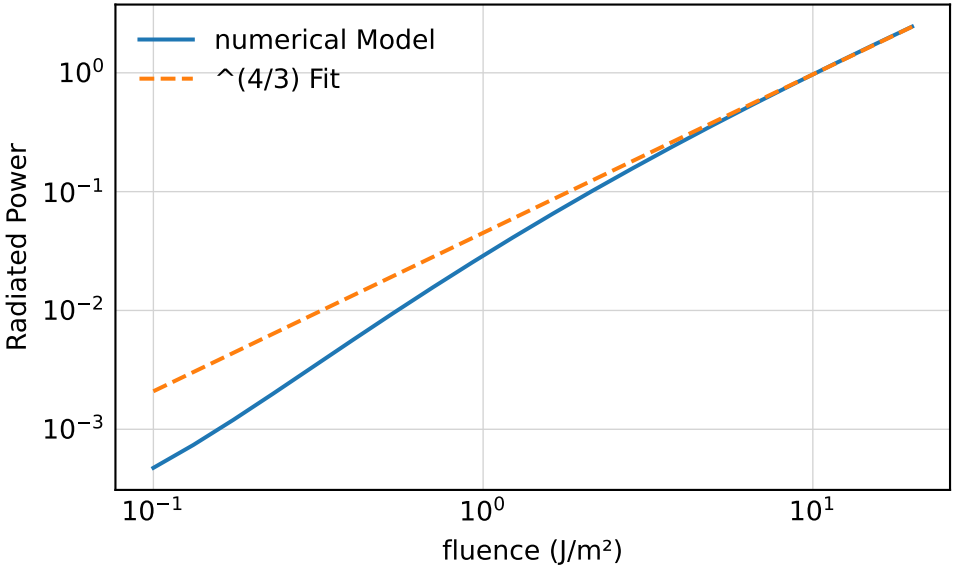

Laser Power (MW)
40
20
0
T_e (10^3 K)
4
2
−200
0
200
400
600
800
1000
1200
t (ps)

Validation

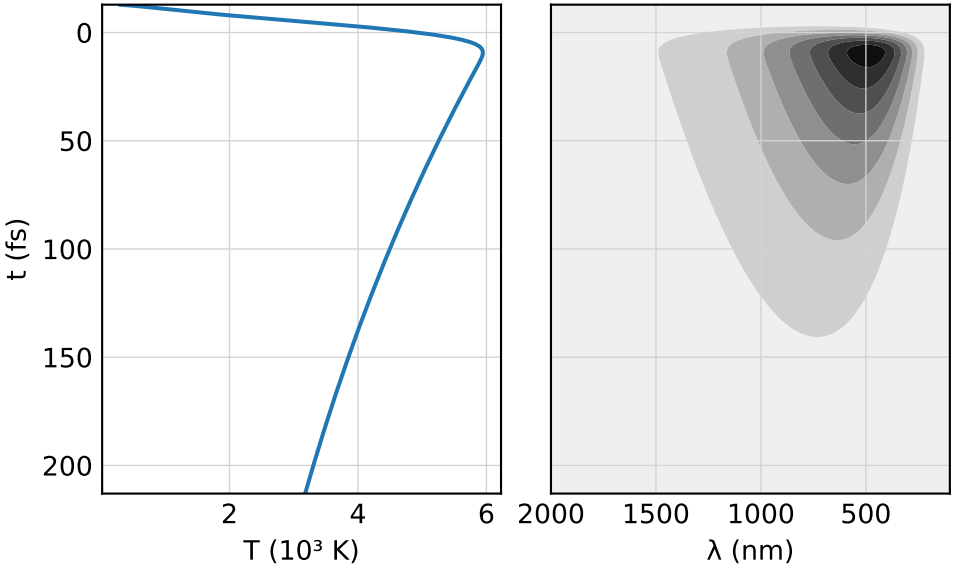




"Hot electron cooling in graphite", Stange et al. 2015 (Fig. 4)

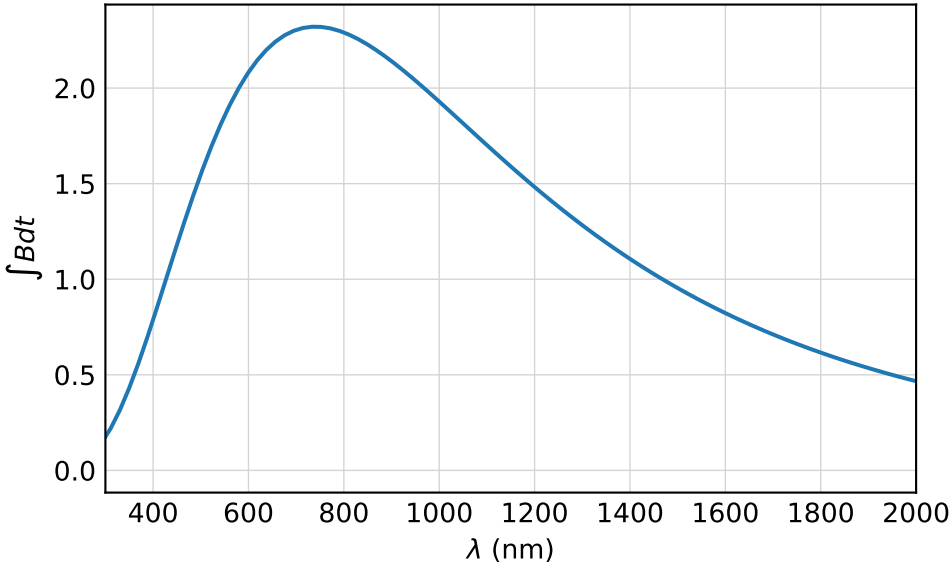


250 fs Laser pulse with different fluence

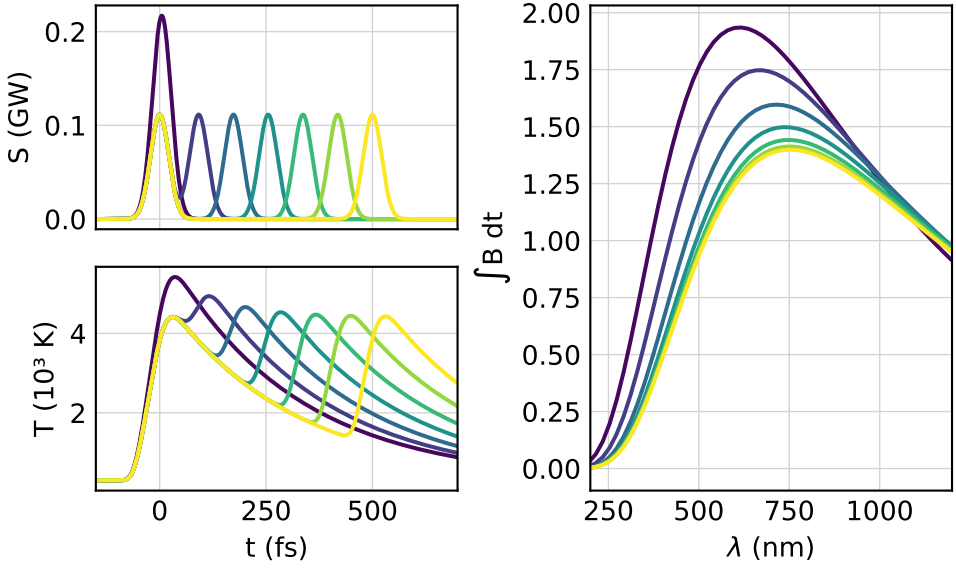


Thermal radiation after 50 fs Laser pulse

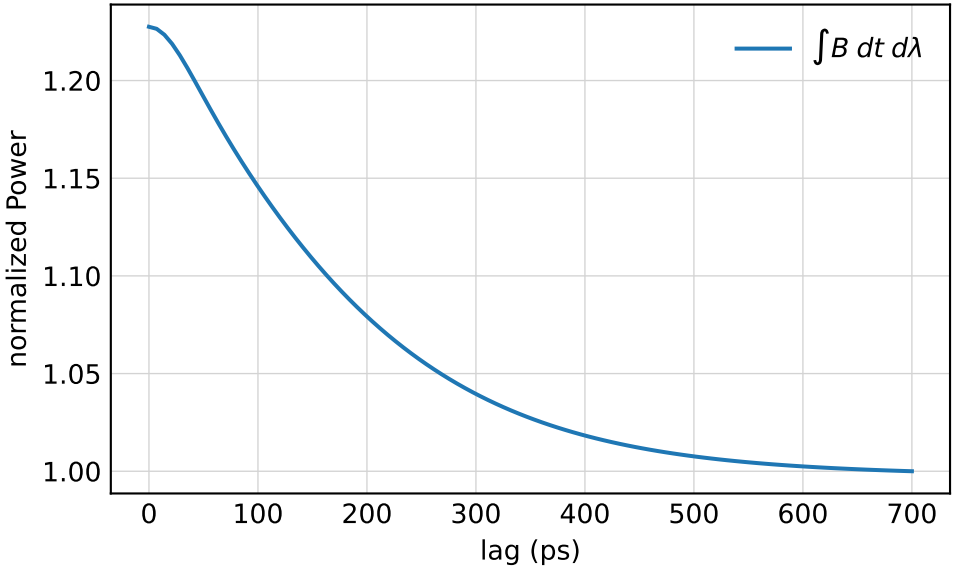
Best Streak Cameras have resolutions of 180 fs. [Wikipedia: Streak Camera]



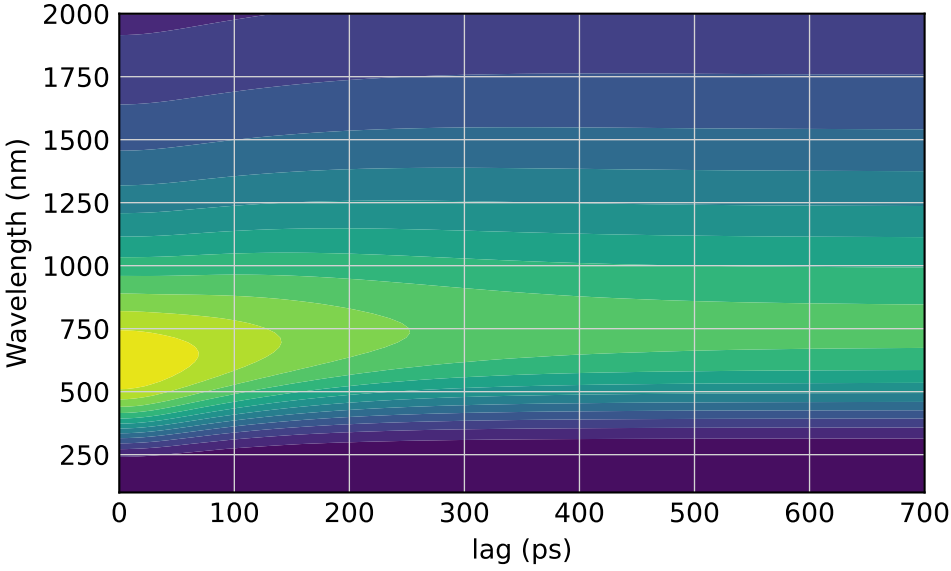
Expected spectrum for 250 fs Laser Pulses



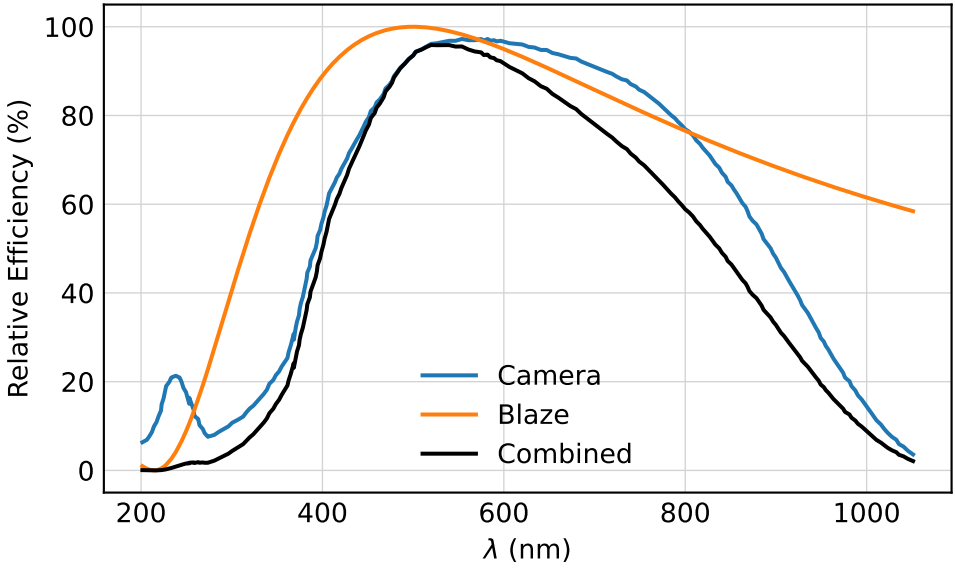
Consecutive 50 fs Laser pulses



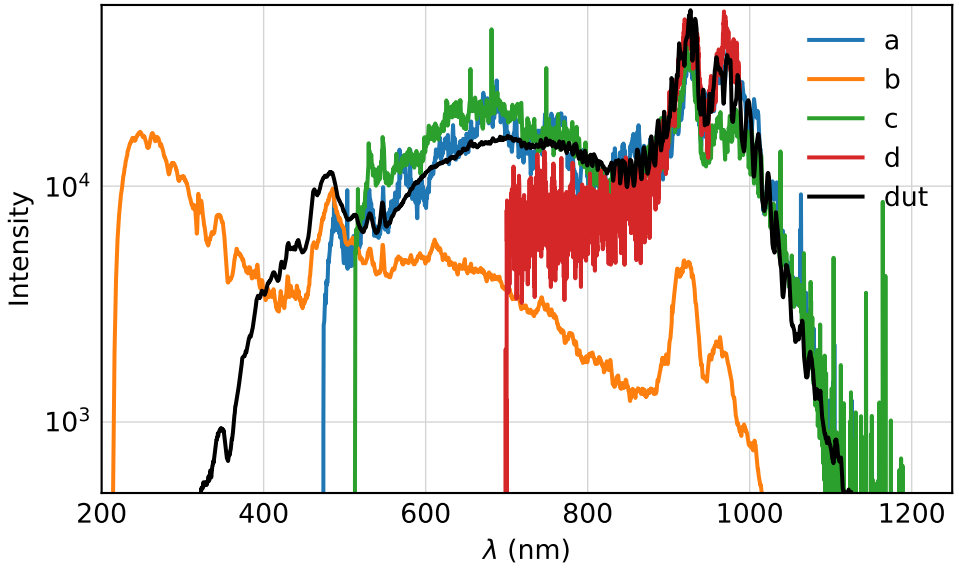
Autocorrelation using 50 fs Laser Pulses

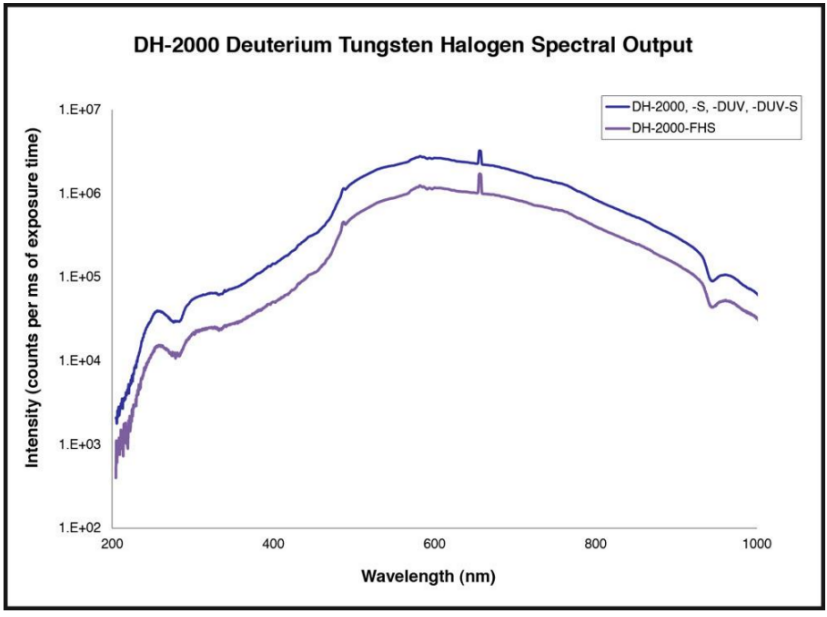


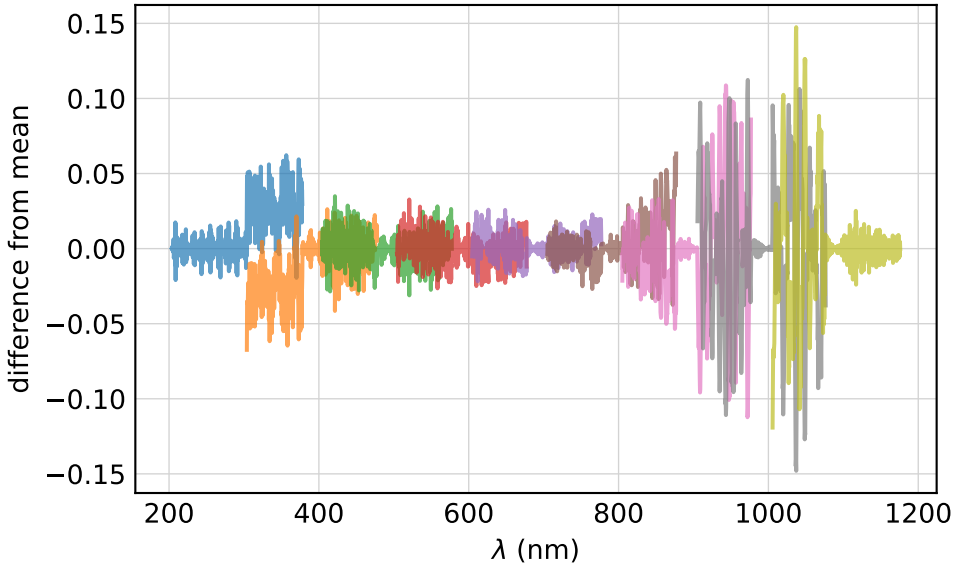
Autocorrelation using 50 fs Laser Pulses

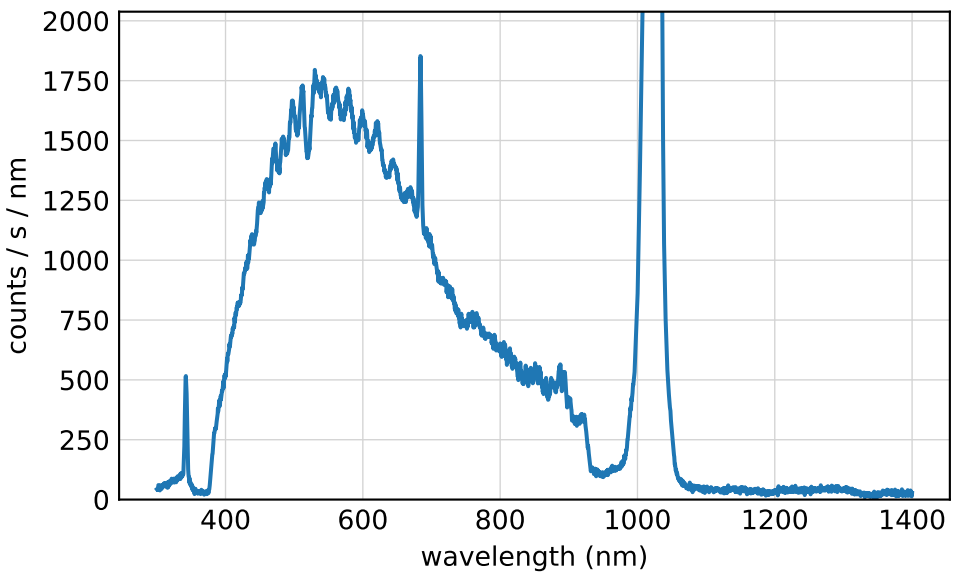


"Ripple correction of high-dispersion IUE spectra - Blazing echelles", Barker 1984


Intensity
10^4
10^3
200
400
600
800
1000
1200
λ (nm)
a
b
c
d
dut

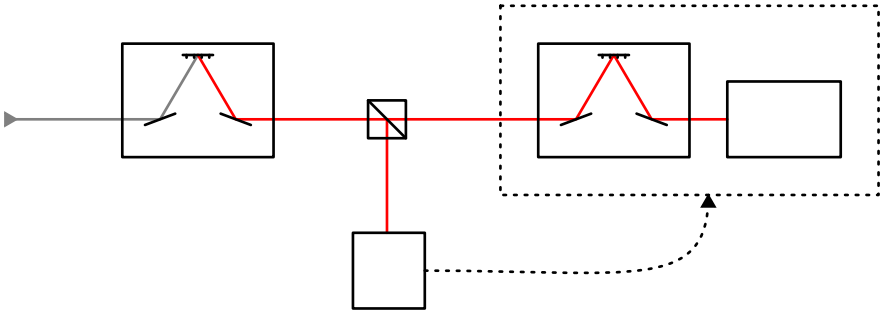

DH-2000 Deuterium Tungsten Halogen Spectral Output
DH-2000, -S, -DUV, -DUV-S
DH-2000-FHS
Intensity (counts per ms of exposure time)
1.E+07
1.E+06
1.E+05
1.E+04
1.E+03
1.E+02
200
400
600
800
1000
Wavelength (nm)

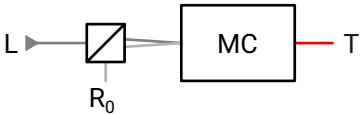

0.15
0.10
0.05
0.00
−0.05
−0.10
−0.15
difference from mean
200
400
600
800
1000
1200
λ (nm)



measured at 300mW 2s

Roob needet 20x5s





$$T = \eta_{\leftarrow}\ \eta_{\text{Detektor}}\ L$$

$$R = \eta_{\leftarrow}\eta_{\rightarrow}\ \eta_{\text{Detektor}}\ L$$

$$\Rightarrow \eta_{\leftarrow} = R/T$$