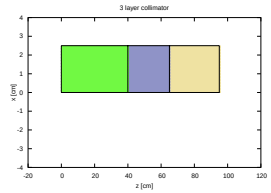
A multilayer jaw

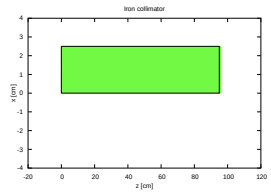
[Z - atomic number - as a function of z - longitudinal position -]

	ρ [g/cm^3]	Z	X_0 [cm]	λ [cm]
Be	1.85	4	35.28	37.06
CC	1.77	6	24.12	42.09
Al	2.70	13	8.90	35.35
Ti	4.54	22	3.56	25.04
Fe	7.87	26	1.76	15.14
Cu	8.96	29	1.44	13.86
W	19.3	74	0.35	8.90

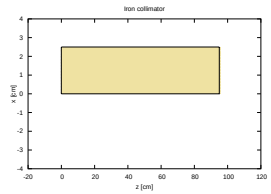
lost protons



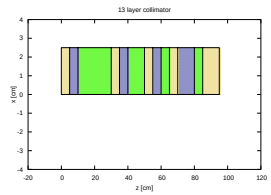
98.27%



92.30%



99.81%



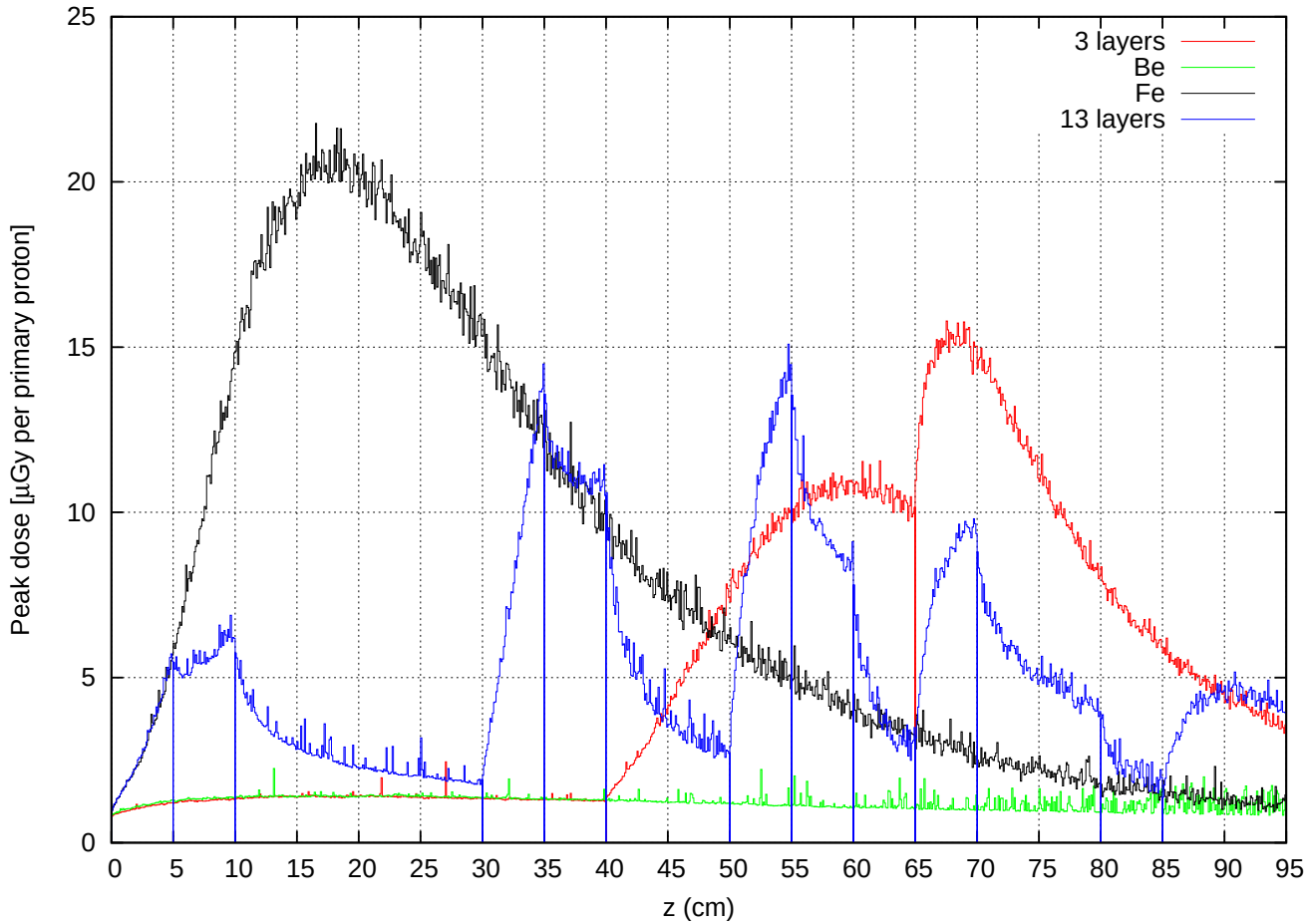
98.27%

Peak dose profile [I]

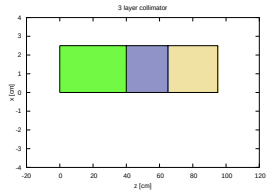
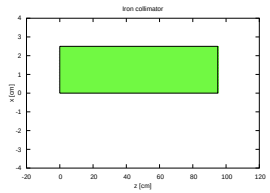
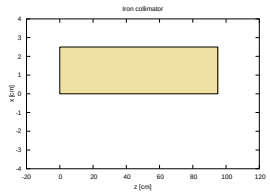
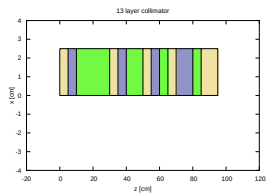
7 TeV proton beam

Gaussian tail above 6 σ_x ($\sigma_x = 0.2\ mm$) in the horizontal plane

Gaussian shape with $\sigma_y = 0.2\ mm$ in the vertical plane



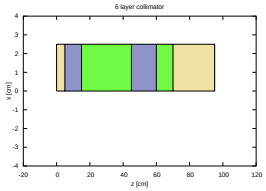
Total heat load

		deposited energy	average dose	
		[GeV]	[nGy]	*per primary proton*
	Be	1.8	0.39	
	Ti	97	13.7	
	Fe	451	30.6	
	Be	13.2	1.20	
	Fe	785	16.8	
	Be	42	9.08	
	Ti	155	21.9	
	Fe	289	19.6	

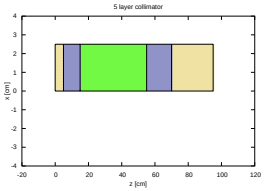
Peak dose profile [II]

some more configurations

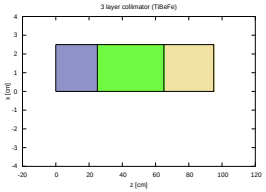
6 layers



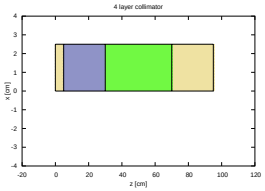
5 layers

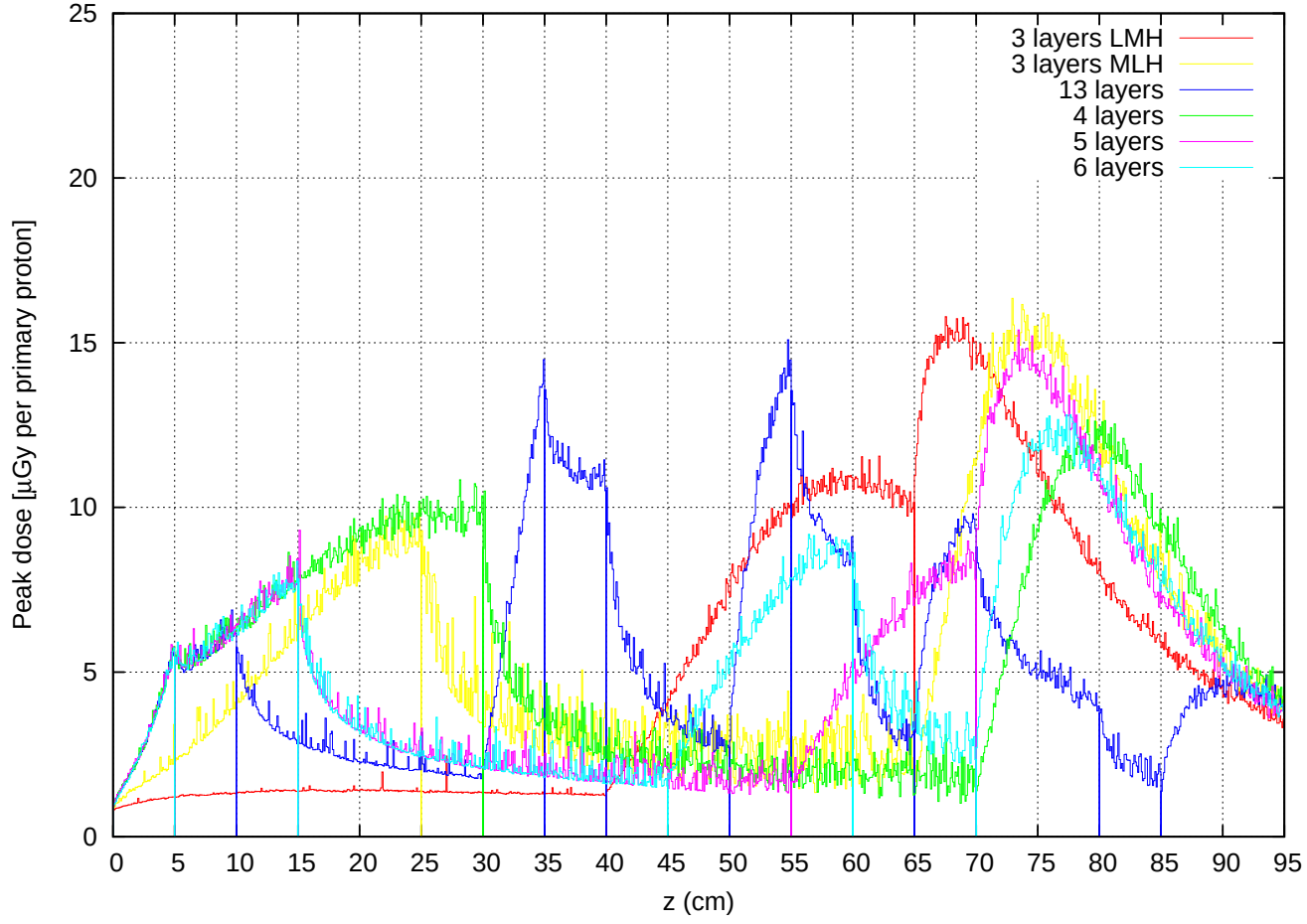


3 layers (MLH)

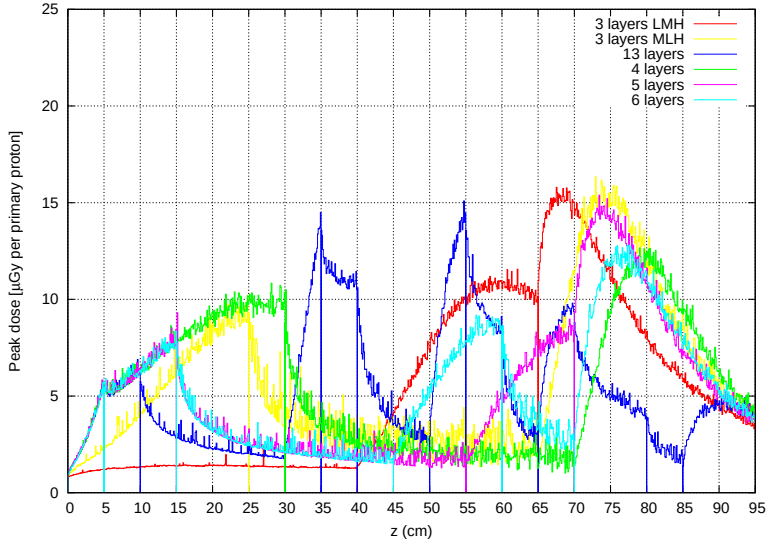


4 layers

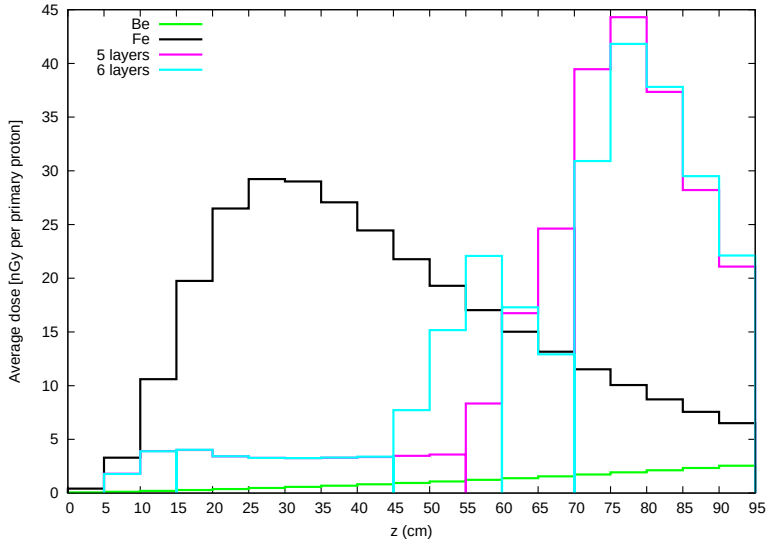




Peak vs Average dose profile



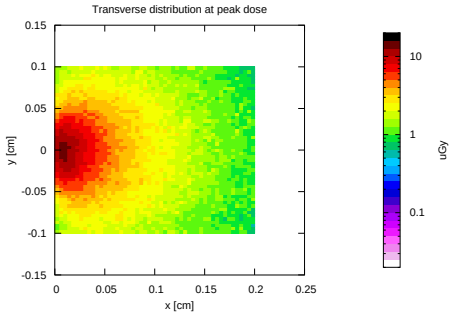
peak

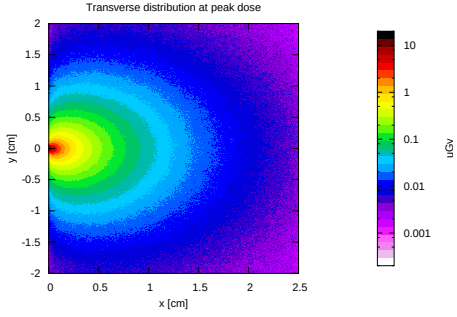


average

Transverse distribution at peak (zoomed and global)

5 layers





6 layers