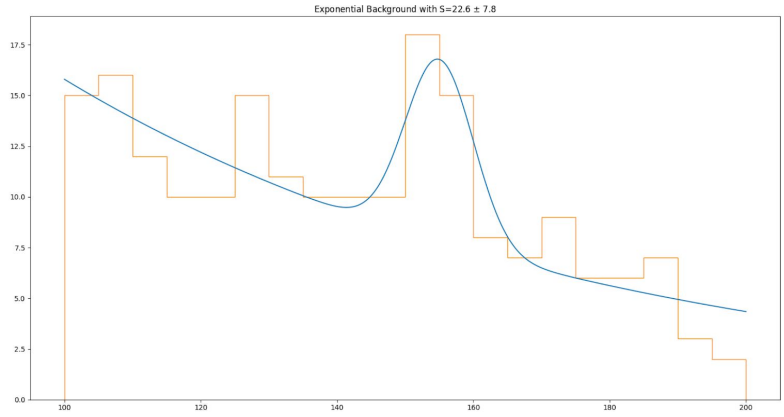
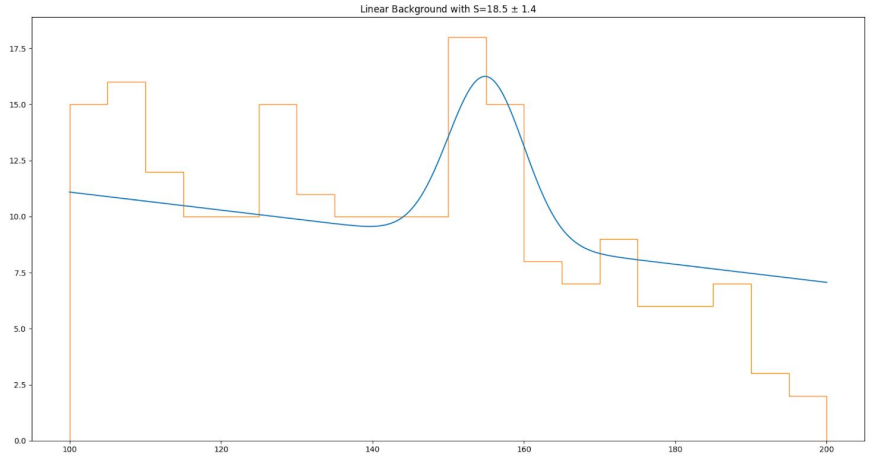
Physics 129L HW8 Problem 1

I tried an exponential fit given by $e^{-\alpha x}$ with one parameter ɑ, a linear fit given by $mx + b$ with two parameters m and b, and a quadratic fit given by $ax^2 + c$, with two parameters a and c. The exponential seems to be the best background fit while the linear background seems to be the worst. Thus, I would conclude $S = 22.6 \pm 7.8 \pm 4$, estimating the systematic uncertainty as 4 from the variability in estimates of S.

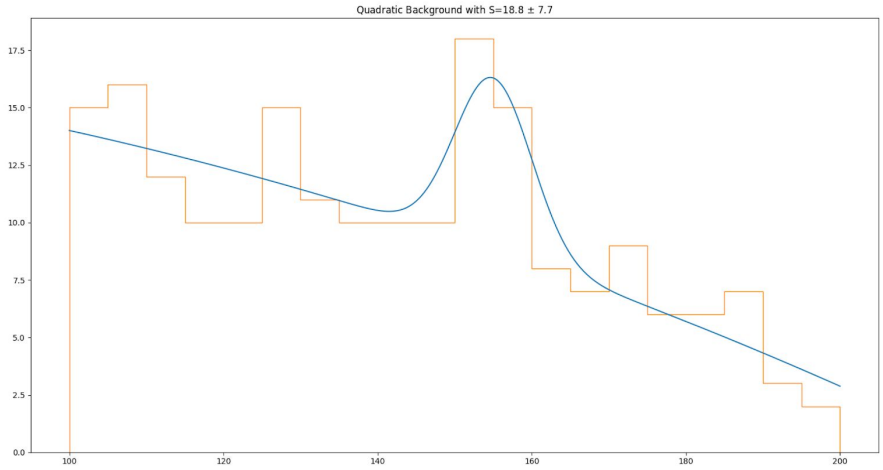
Exponential: $S = 22.6 \pm 7.8$



Linear: $S = 18.5 \pm 1.4$



Quadratic: $S = 18.8 \pm 7.7$



Output from Minos with exponential, linear, and quadratic, in order.

	Name	Value	Para Err	Err-	Err+	Limit-	Limit+	
0	S =	22.6	7.807	-7.49	8.137			
1	B =	177.4	14.69	-14.3	15.08			
2	alpha =	0.01291	0.002799	-0.002771	0.002829			

	Name	Value	Para Err	Err-	Err+	Limit-	Limit+	
0	S =	18.48	1.388	-1.388	1.388			
1	B =	181.5	1.407	-1.407	1.407			
2	m =	4.745E+04	1.414	-1.414	-4.745E+04			
3	b =	-1.781E+07	1.414	-1.414	1.414			

	Name	Value	Para Err	Err-	Err+	Limit-	Limit+	
0	S =	18.77	7.674	-7.353	8.009			
1	B =	181.2	14.88	-14.49	15.28			
2	a =	-0.0001832	0.0001621	-0.0001621	0.0001621			
3	c =	8.749	7.744	-7.744	7.744			