Electronic Work Record – Laura Cairns
Project Notes – Term 1, Week 1

05/10/20

Made Glossary on end page of word doc.

Tom Hase Error Book Revision (Chapters 6 & 7)

1. Chi-squared
2. Curvature & Covariance matrices
3. Correlation matrix
4. Correlation coefficients ρ_{AB}
5. Look up table in TPA Hase book page 95

Eur. Phys. J. C (2019) 79:497 (2nd Mika Paper)

1. Good theory notes
2. Decay process we will be observing
3. Simulations of measurement
4. Paper for measurement of forward W & Z boson production at LHCb https://link.springer.com/article/10.1007%2FJHEP01%282016%29155
5. Paper for future ATLAS measurement prospects https://cds.cern.ch/record/2645431
6. Section 4 – Understanding the PDF uncertainties
7. Section 5 – PDF uncertainty reduction
    a. Simultaneous fit of W+ and W-
    b. Dependence of detector acceptance on uncertainty (stat)

Questions/To study:

1. What does it mean for a PDF to "bias the determination of M_W"?
2. Replicas
3. Toy data
4. Bins

Robin Ball project briefing – Made notes in Journal (Attached below)

Organised first project meeting, 08/10/20, 1200

08/10/20 – First Mika Meeting

GitHub

Using GitHub for electronic record, code sharing and discussion.

Creating account and then adding to a shared directory. Using Mika GitHub and creating a fork.

https://github.com/mvesteri/MPhysProject2021

Use “emacs -nw” for code editor (Mika preference)

Accessing SCRPT

Use putty to access servers

ssh -X -Y phukjd@godzilla.csc.warwick.ac.uk

Or remove “ssh -X -Y” for putty entry

Data access: (relevant data is stored here, use this command to check for access)

ls /storage/epp2/phshgg/MPhysProject2021/

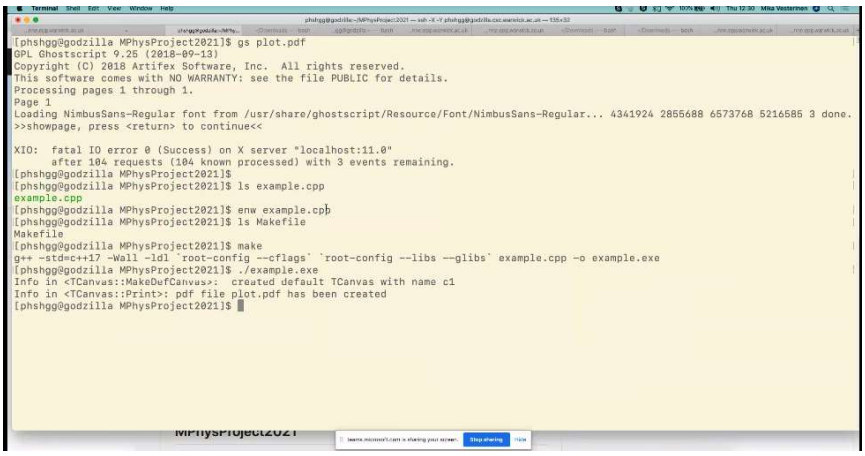
Notes in book regarding code meanings, mechanically and in relation to physics

Git clone:

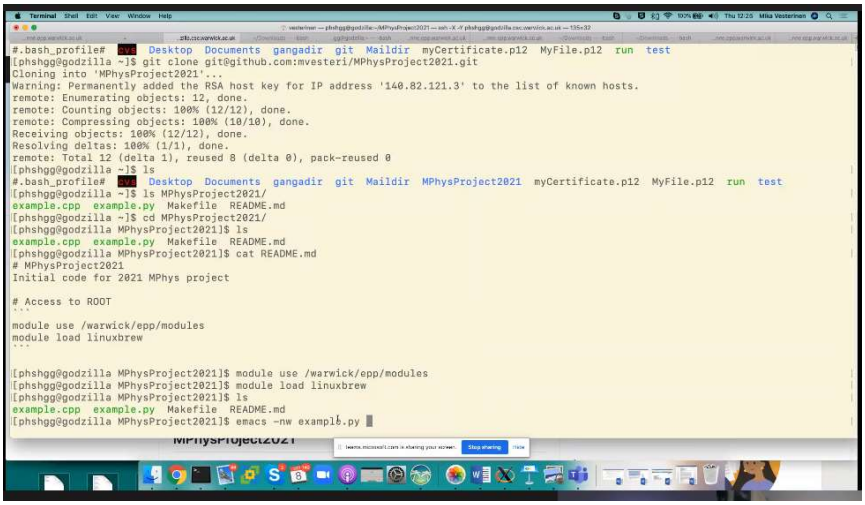
git clone git@github.com:mvesteri/MPhysProject2021.git

Screenshots: *(Code later clarified with list of commands)*

Load C code file:



Load python and directory:



Glossary

Definitions in order of appearance in notes book

4	α	fine structure constant
	G_μ	Fermi constant
		Drell-Yan Process
5		Parton
	PDF	Parton distribution function
6	η	pseudorapidity
	p_T^l	Charged lepton transverse momentum
	p_L	Longitudinal momentum
		Rest mass – energy equation
7	fb^{-1}	Inverse femtobarn
8		Quarkonium
		BACKGROUND PROCESSES
10	**A**	Curvature Matrix
	C	Covariance or Error Matrix
	σ_{AB}	Covariance
	ρ_{AB}	Correlation Matrix & Correlation coefficient

Workbook Notes

PAGE	DATE	TOPIC
9 – 11	05/10/2020	Tom Hase Error Book Revision (Chapters 6 & 7)
11 – 14		Eur. Phys. J. C (2019) 79:497 (2nd Mika Paper)
15 – 16	08/10/2020	First project meeting with Mika
	05/10/2020	Project Briefing notes