

# 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  $\rho_{AB}$
5. Look up table in TPA Hase book page 95

Eur. Phys. J. C (2019) 79:497 (2<sup>nd</sup> 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<sup>+</sup> and W<sup>-</sup>
  - 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/
```

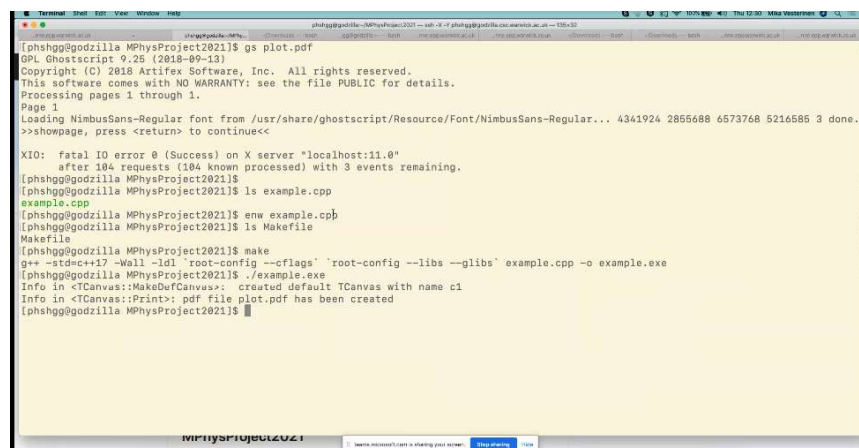
Notes in book regarding code meanings, mechanically and in relation to physics

Git clone:

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

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

Load C code file:



```
[phshgg@godzilla MPhysProject2021]$ gs plot.pdf
GPL Ghostscript 9.25 (2018-09-13)
Copyright (C) 2018 Artifex Software, Inc. All rights reserved.
This software comes with NO WARRANTY: see the file PUBLIC for details.
Processing pages 1 through 1.
Page 1
Loading NimbusSans-Regular font from /usr/share/ghostscript/Resource/Font/NimbusSans-Regular... 4341924 2855688 6573768 5216585 3 done.
>>showpage, press <return> to continue<<
XIO: fatal IO error 0 (Success) on X server "localhost:11.0"
after 104 requests (104 known processed) with 3 events remaining.
[phshgg@godzilla MPhysProject2021]$
[phshgg@godzilla MPhysProject2021]$ ls example.cpp
example.cpp
[phshgg@godzilla MPhysProject2021]$ eww example.cpp
[phshgg@godzilla MPhysProject2021]$ ls Makefile
Makefile
[phshgg@godzilla MPhysProject2021]$ make
g++ -std=c++17 -Wall -ldl -root-config --cflags `root-config --libs --glibs` example.cpp -o example.exe
[phshgg@godzilla MPhysProject2021]$ ./example.exe
Info in <TCanvas::MakeDefCanvas>: created default TCanvas with name c1
Info in <TCanvas::Print>: pdf file plot.pdf has been created
[phshgg@godzilla MPhysProject2021]$
```

Load python and directory:

A screenshot of a Linux terminal window. The terminal shows the following commands and output:  

```
# .bash_profile Desktop Documents gangadir git Maildir myCertificate.p12 MyFile.p12 run test  
[phshgg@godzilla ~]$ git clone git@github.com:mvesteri/MPhysProject2021.git  
Cloning into 'MPhysProject2021'...  
Warning: Permanently added the RSA host key for IP address '140.82.121.3' to the list of known hosts.  
remote: Enumerating objects: 12, done.  
remote: Counting objects: 100% (12/12), done.  
remote: Compressing objects: 100% (10/10), done.  
receiving objects: 100% (12/12), done.  
Resolving deltas: 100% (1/1), done.  
remote: Total 12 (delta 1), reused 8 (delta 0), pack-reused 0  
[phshgg@godzilla ~]$ ls  
# .bash_profile Desktop Documents gangadir git Maildir MPhysProject2021 myCertificate.p12 MyFile.p12 run test  
example.cpp example.py Makefile README.md  
[phshgg@godzilla ~]$ cd MPhysProject2021/  
[phshgg@godzilla MPhysProject2021]$ ls  
example.cpp example.py Makefile README.md  
[phshgg@godzilla MPhysProject2021]$ cat README.md  
# MPhysProject2021  
Initial code for 2021 MPhys project  
  
# Access to ROOT  
...  
module use /warwick/epm/modules  
module load linuxbrew  
  
[phshgg@godzilla MPhysProject2021]$ module use /warwick/epm/modules  
[phshgg@godzilla MPhysProject2021]$ module load linuxbrew  
[phshgg@godzilla MPhysProject2021]$ ls  
example.cpp example.py Makefile README.md  
[phshgg@godzilla MPhysProject2021]$ emacs -nw exampl*.py
```

  
At the bottom of the terminal, there is a red banner that says "MPhysProject2021". Below the terminal window, a Windows taskbar is visible with various application icons.

## Glossary

### Definitions in order of appearance in notes book

[illegible]

## 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 (2 <sup>nd</sup> Mika Paper) |
| 15 – 16 | 08/10/2020 | First project meeting with Mika                            |
|         | 05/10/2020 | Project Briefing notes                                     |
|         |            |  |
|         |            |  |