

25th Feb. 2021

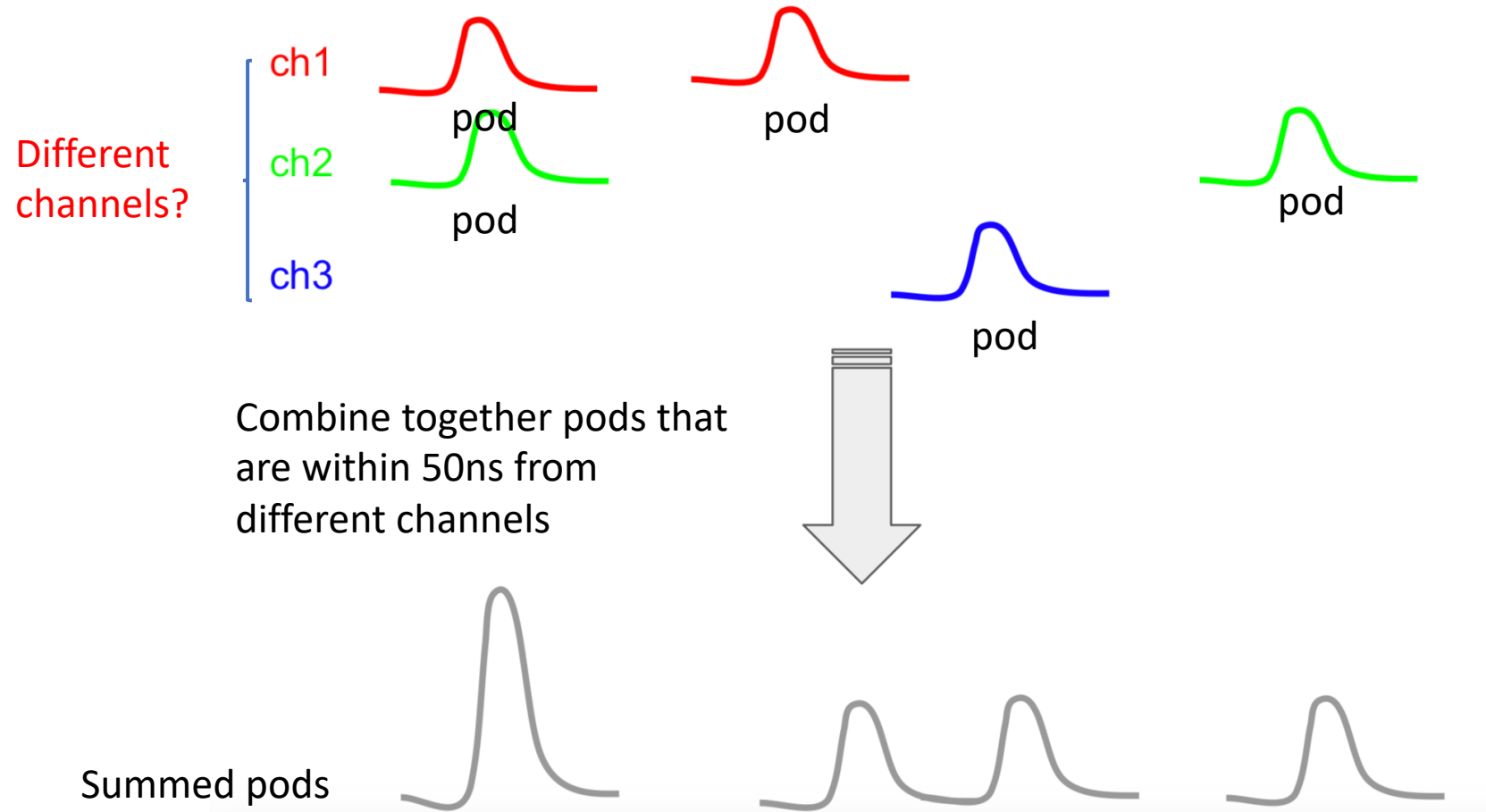
- **Physics REadiness Monitor (PREM):**

- Uses the reduced quantities (RQs) to automatically generate plots from the data
- Has shifters looking through the plots to look for the problem in the detector
- **Input data:** fully processed data after LZAP ~after 8 hours

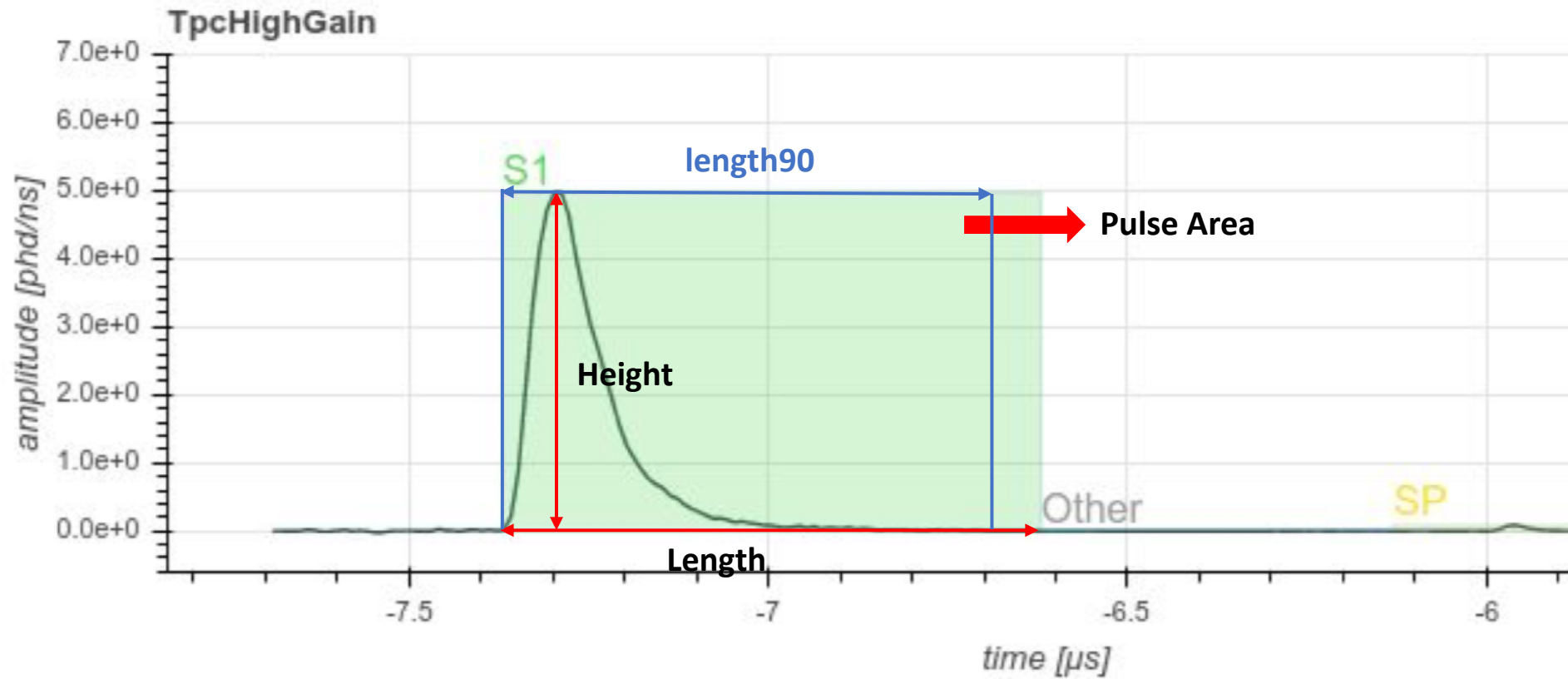
- **My goal:**

- Working on PREM_TPC module-> produce PREM plots and add them to PREM website:
 - **Pulse Classification's Parameter Space** (UPM module on Twiki); **input:** ~8h MDC3 data; all events pulse
 - [Area vs Length90](#)
 - [Area vs pFraction100](#)
 - [Length90 vs Height](#)
 - [TBA vs Area](#)
 - [TBA vs Length90](#)
 - [Height/Length90 vs Area](#)
 - [Height/Length90 vs Length90](#)
 - [Area/Height vs Area](#)
 - [Area/Height vs Area/Length90](#)
 - [Area/Length90 vs Length90](#)
 - [pFraction90 vs Area/Length90](#)
- Understand the physics process behind the plot
- Develop the proper algorithm for the plot: mean, std.....

POD



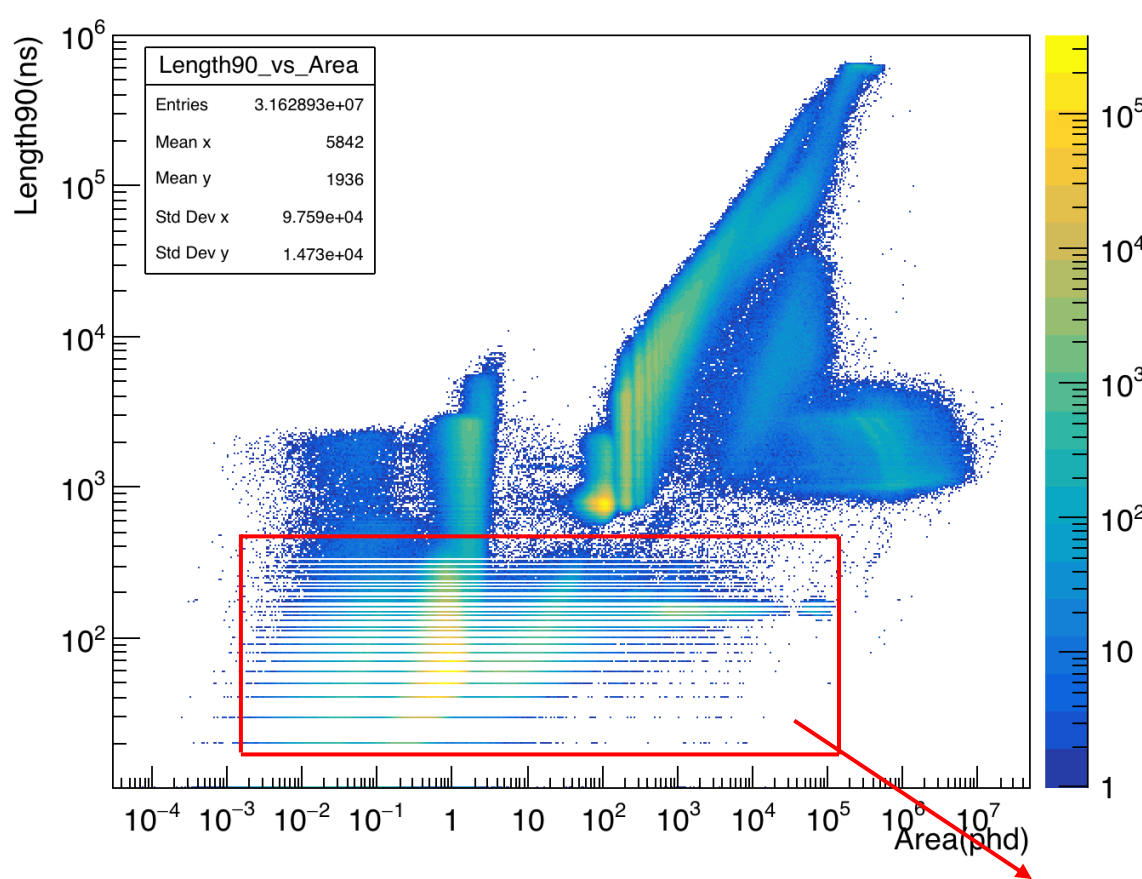
Pulse



Area vs Length90

Length90: Time at which summed pod reaches 90% of total area

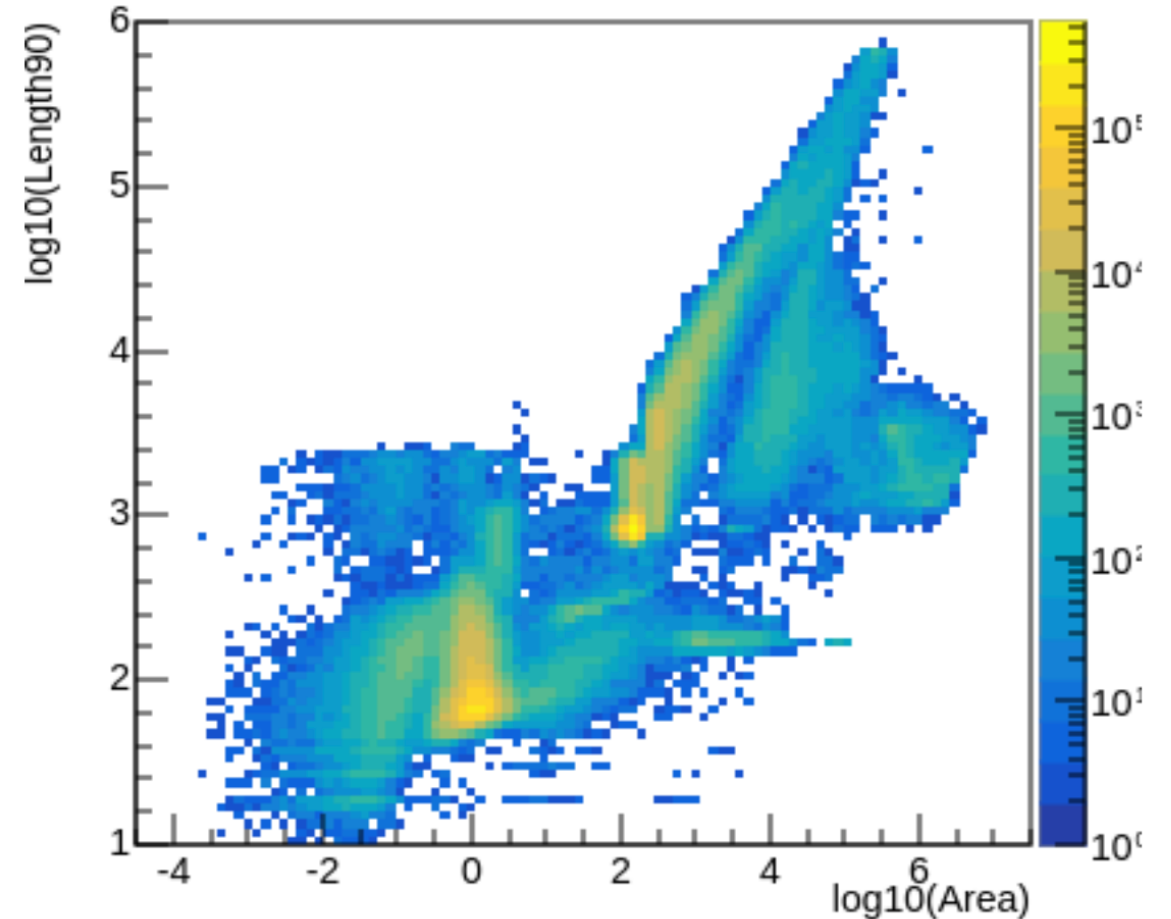
Area vs Length90



PREM

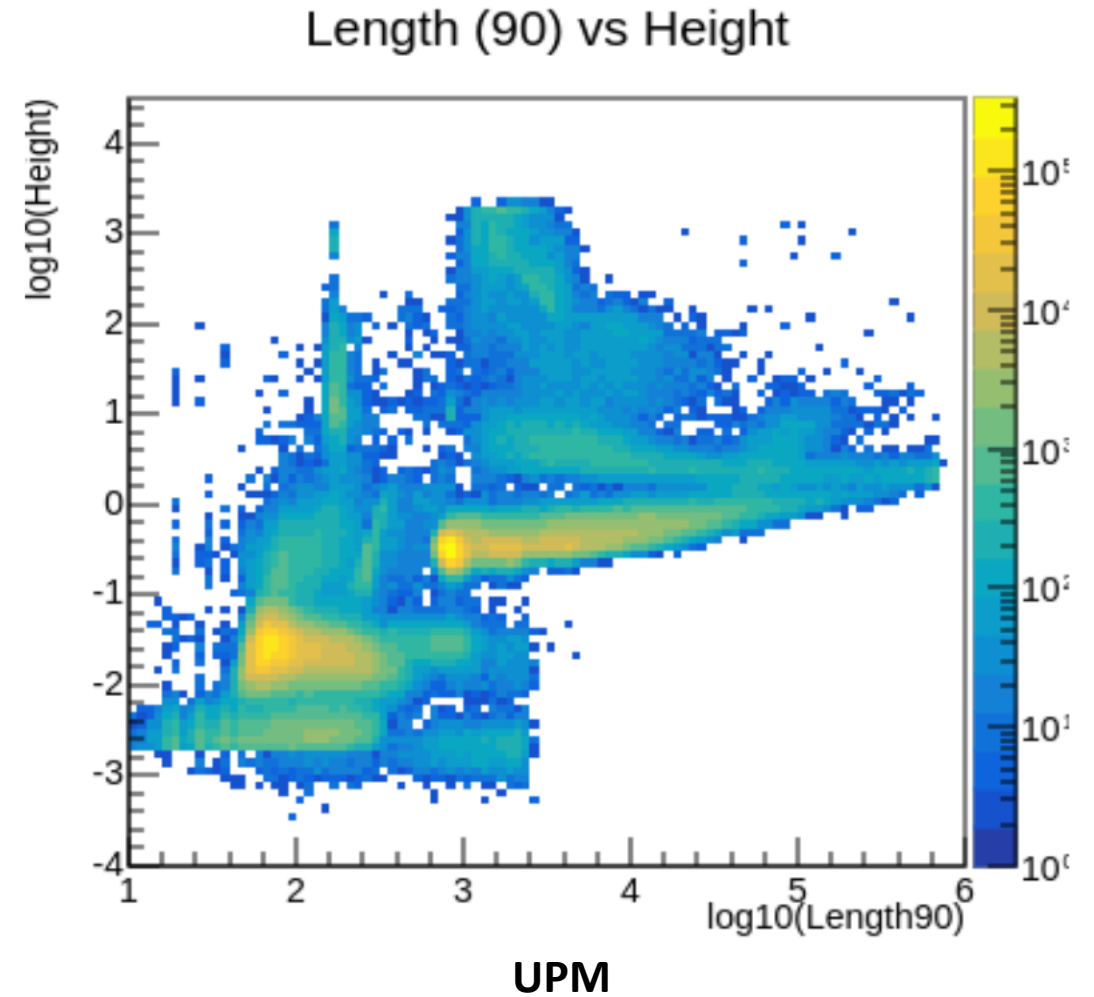
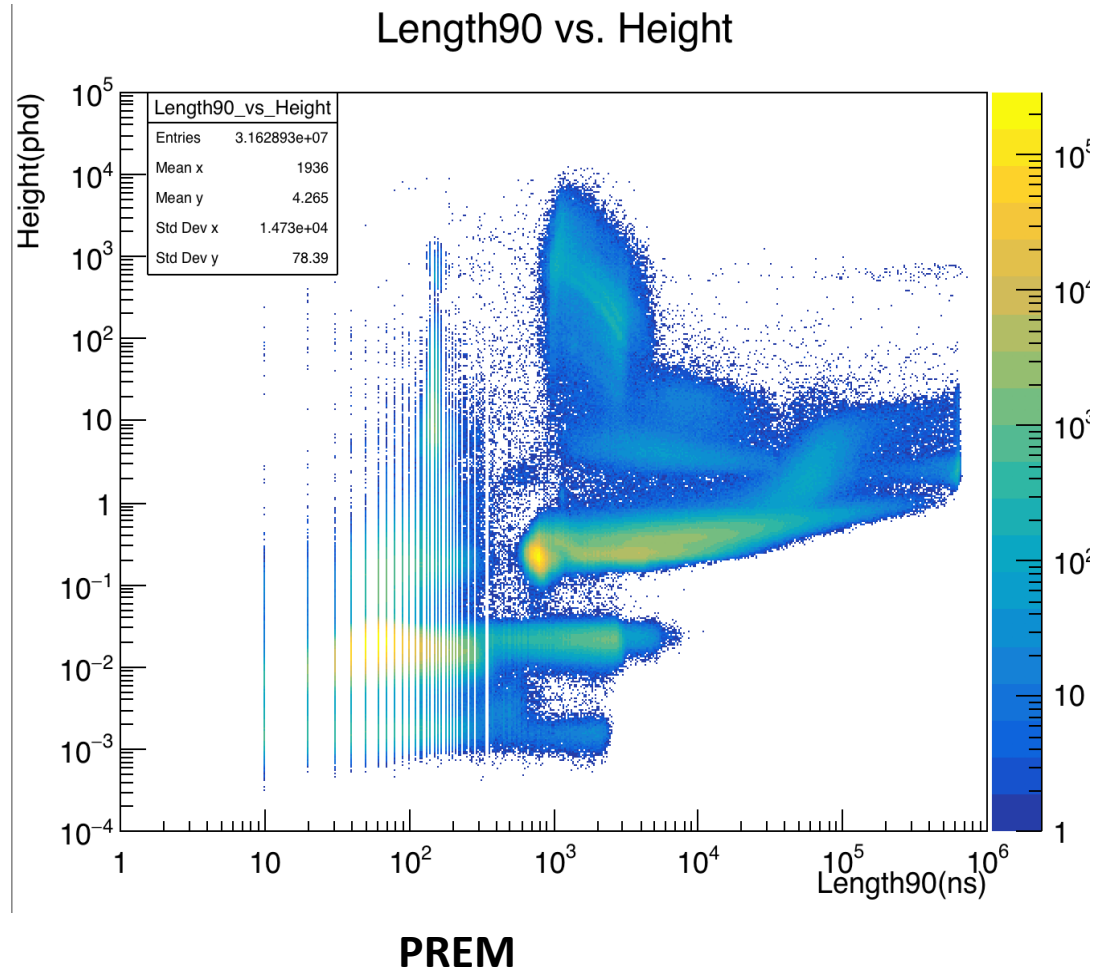
The smallest data
sample interval = 10ns

Length(90) vs Area



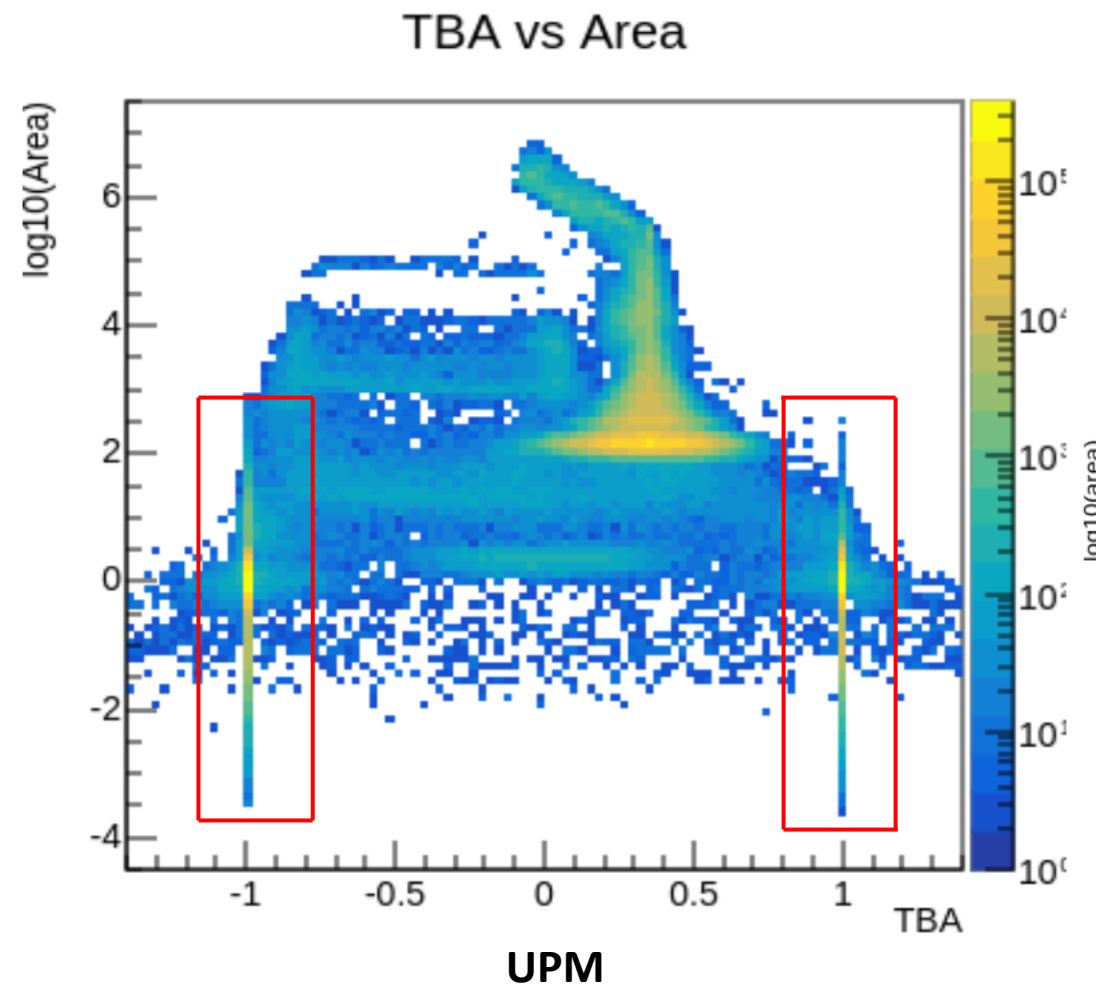
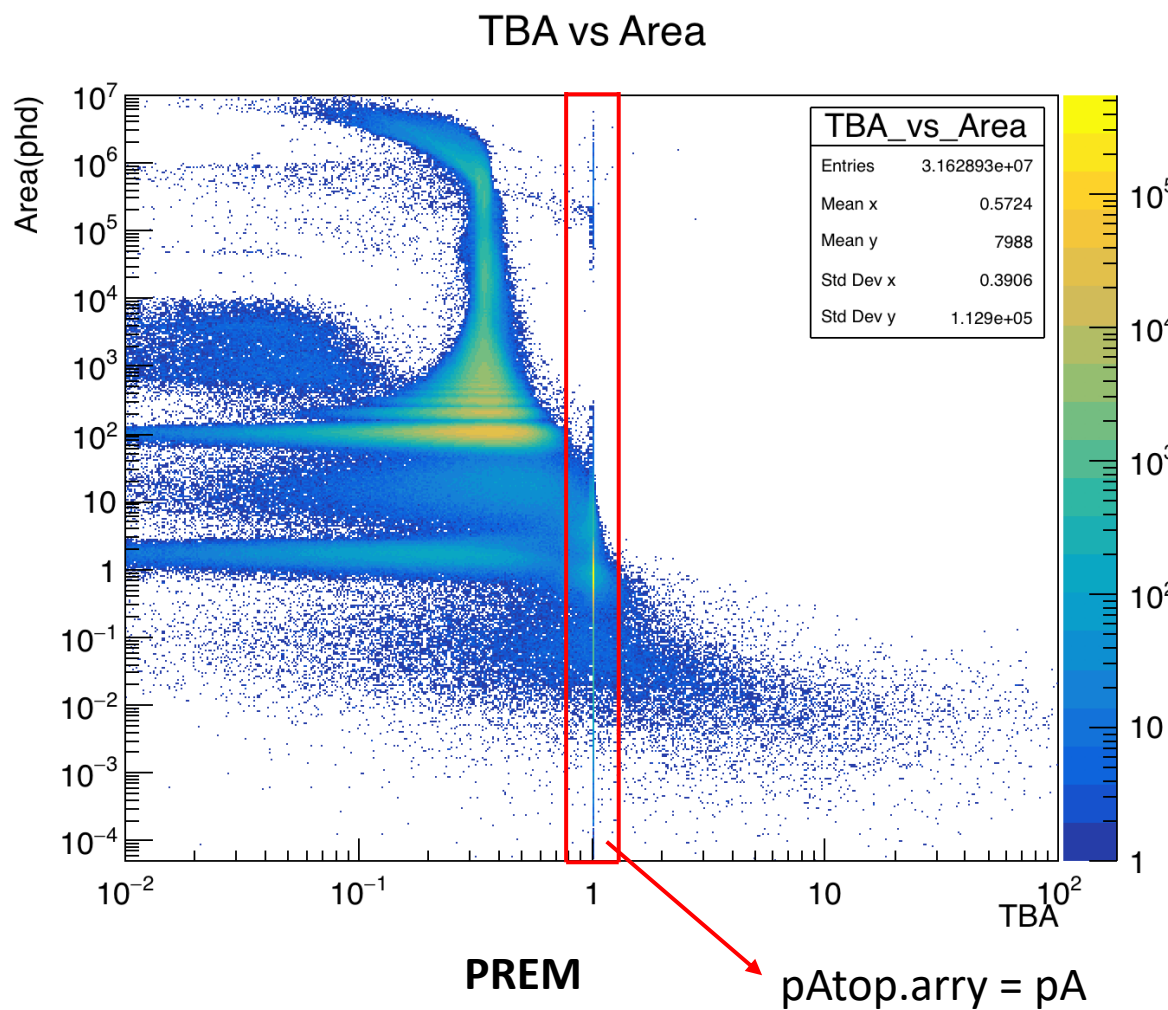
UPM

Length 90 vs Height



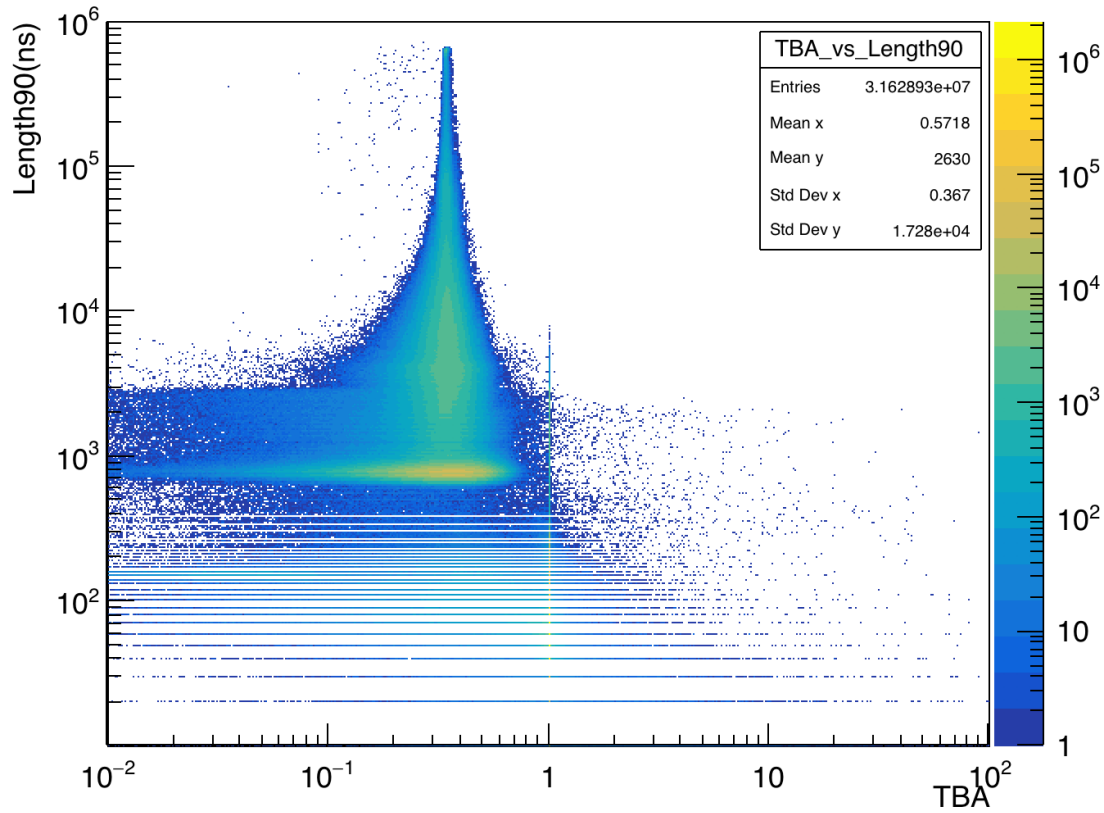
TBA vs Area

Top-bottom asymmetry (TBA) =
 $(pA_{top.array} - pA_{bot.array}) / pA$



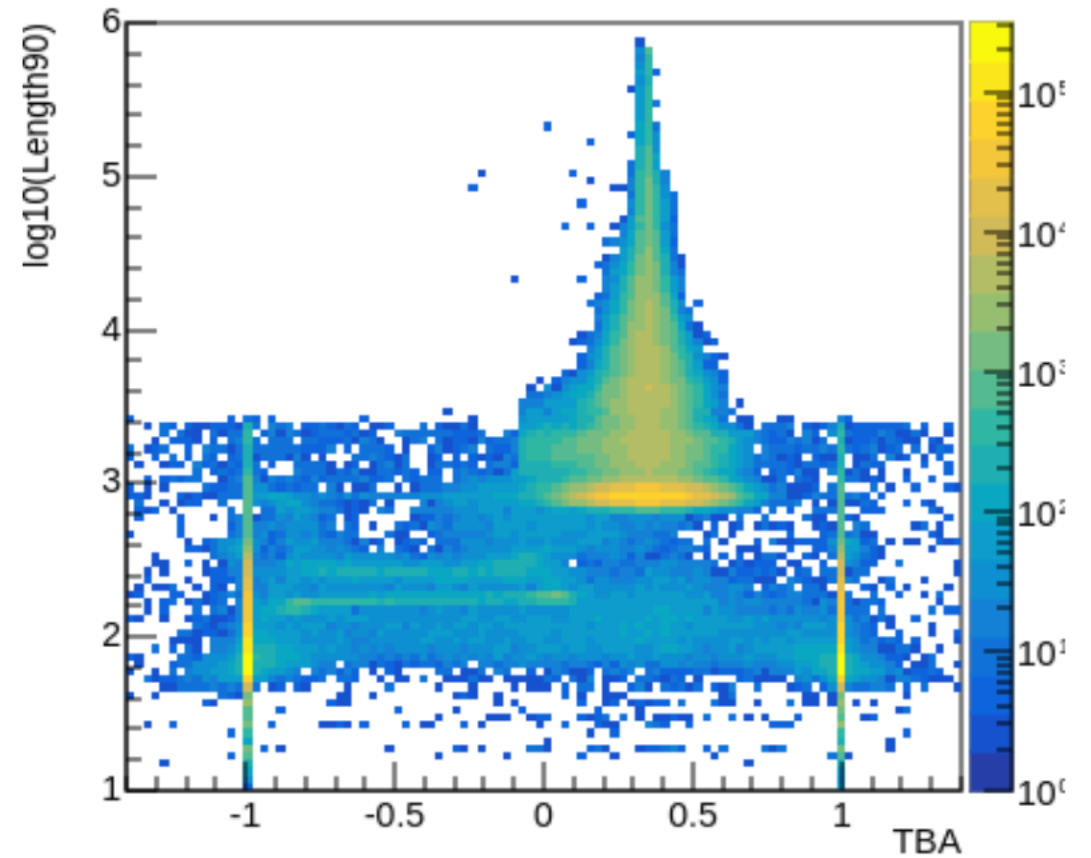
TBA vs Length90

TBA vs. Length90



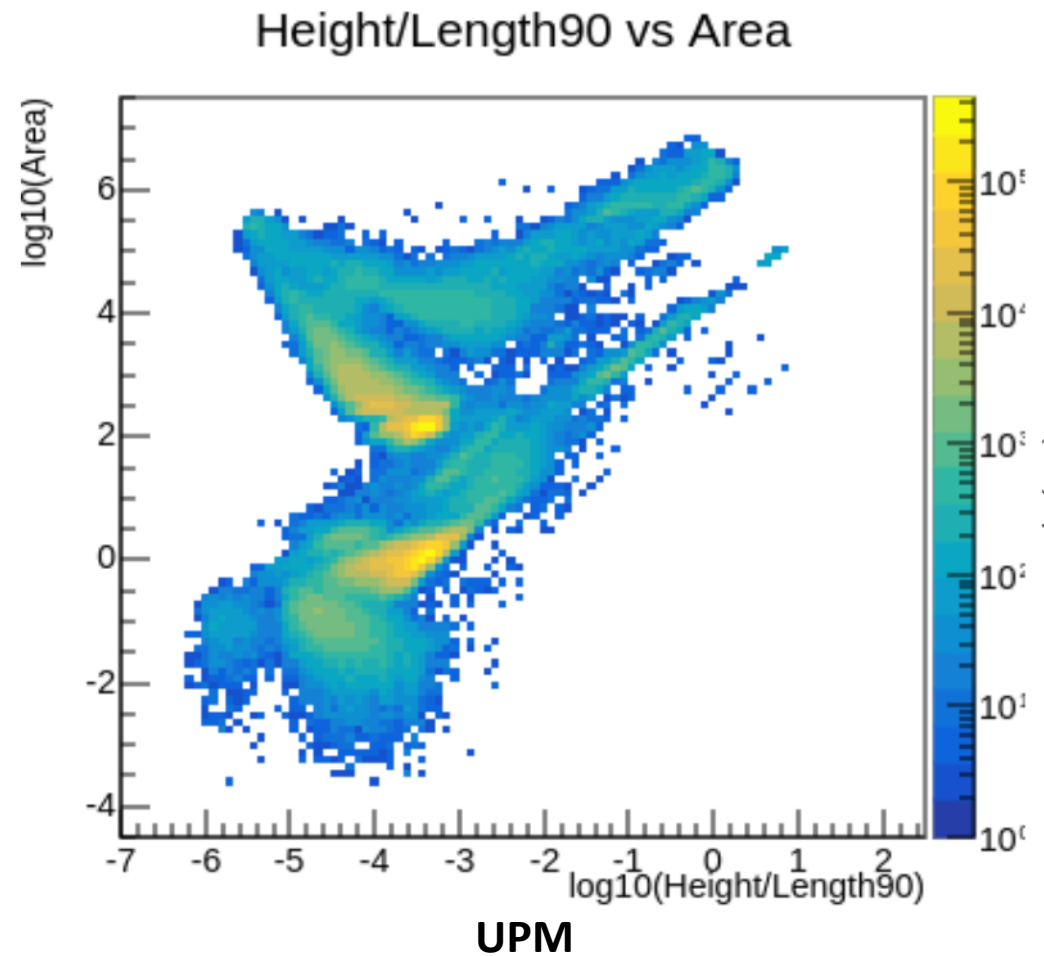
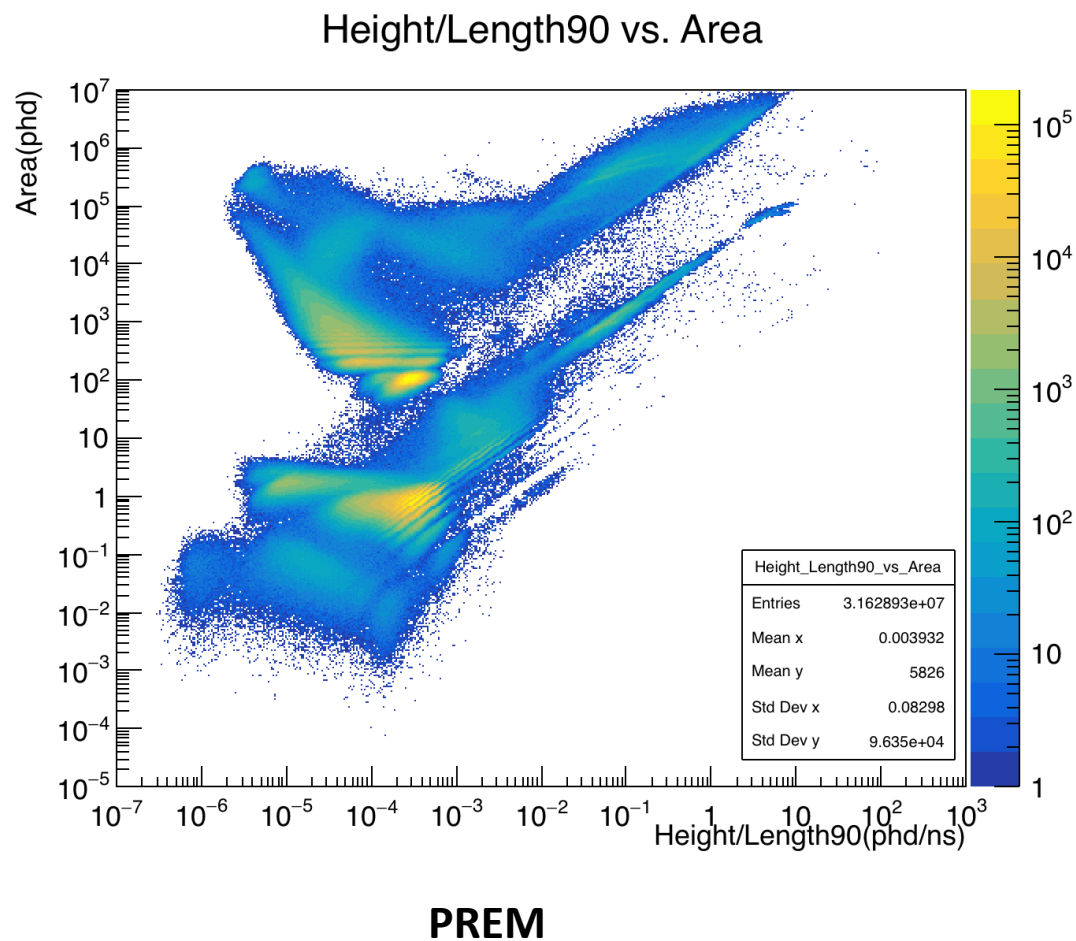
PREM

TBA vs Length(90)

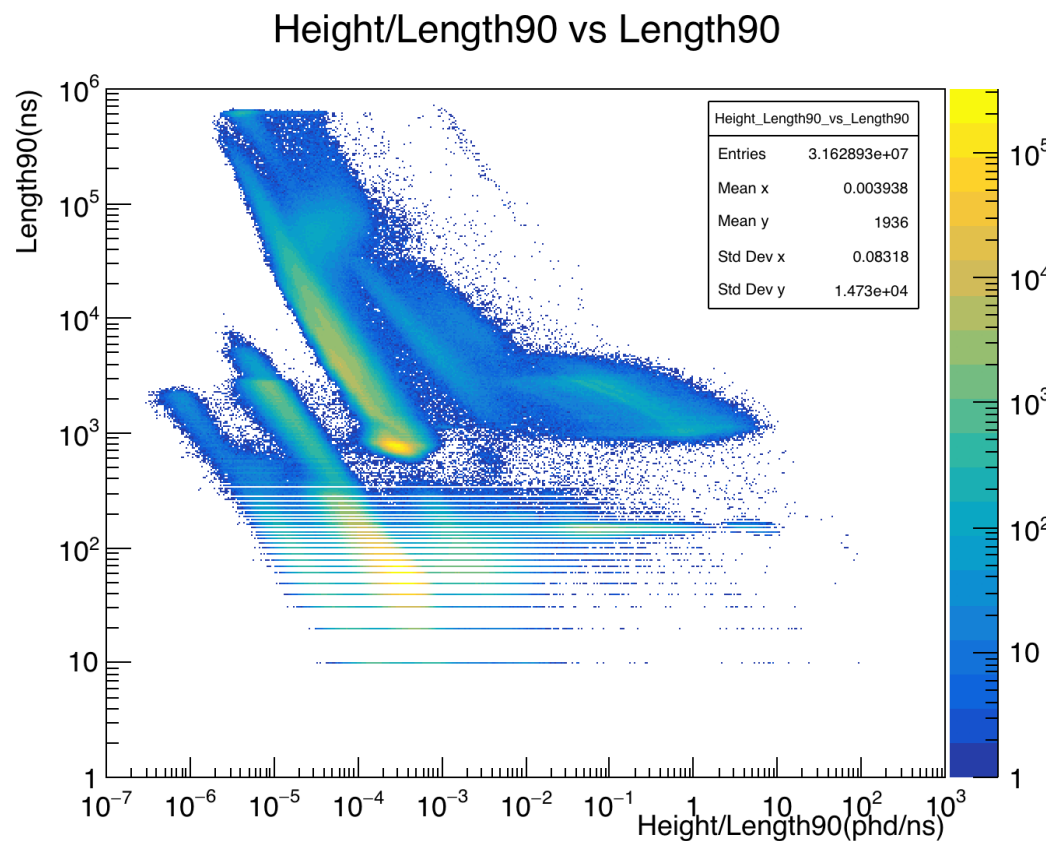


UPM

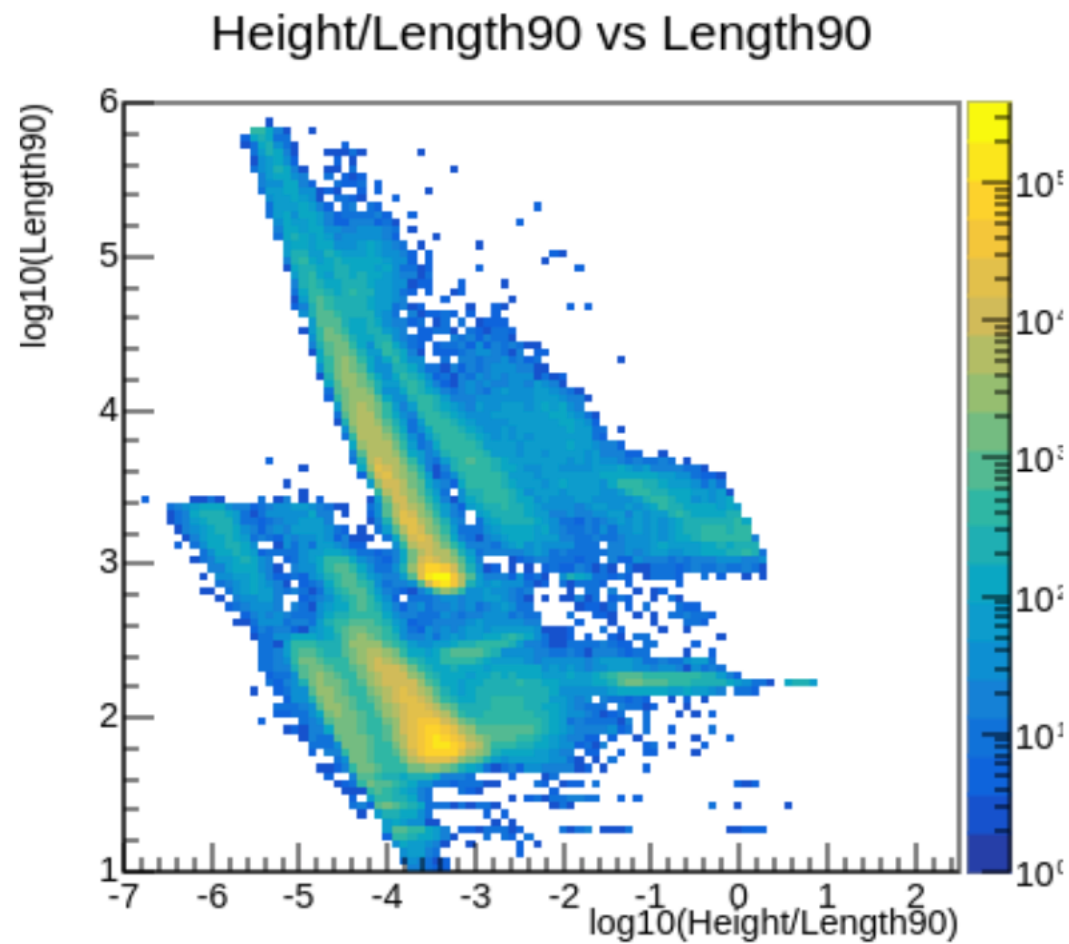
Height/Length90 vs Area



Height/Length90 vs Length90

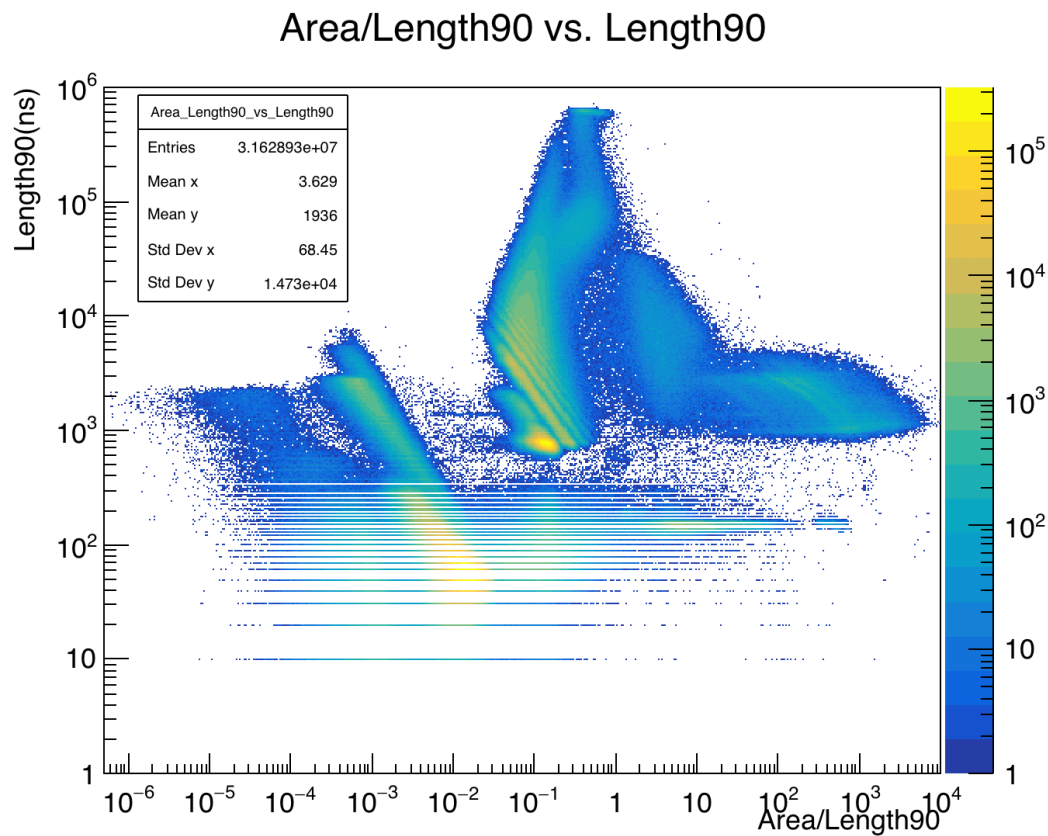


PREM

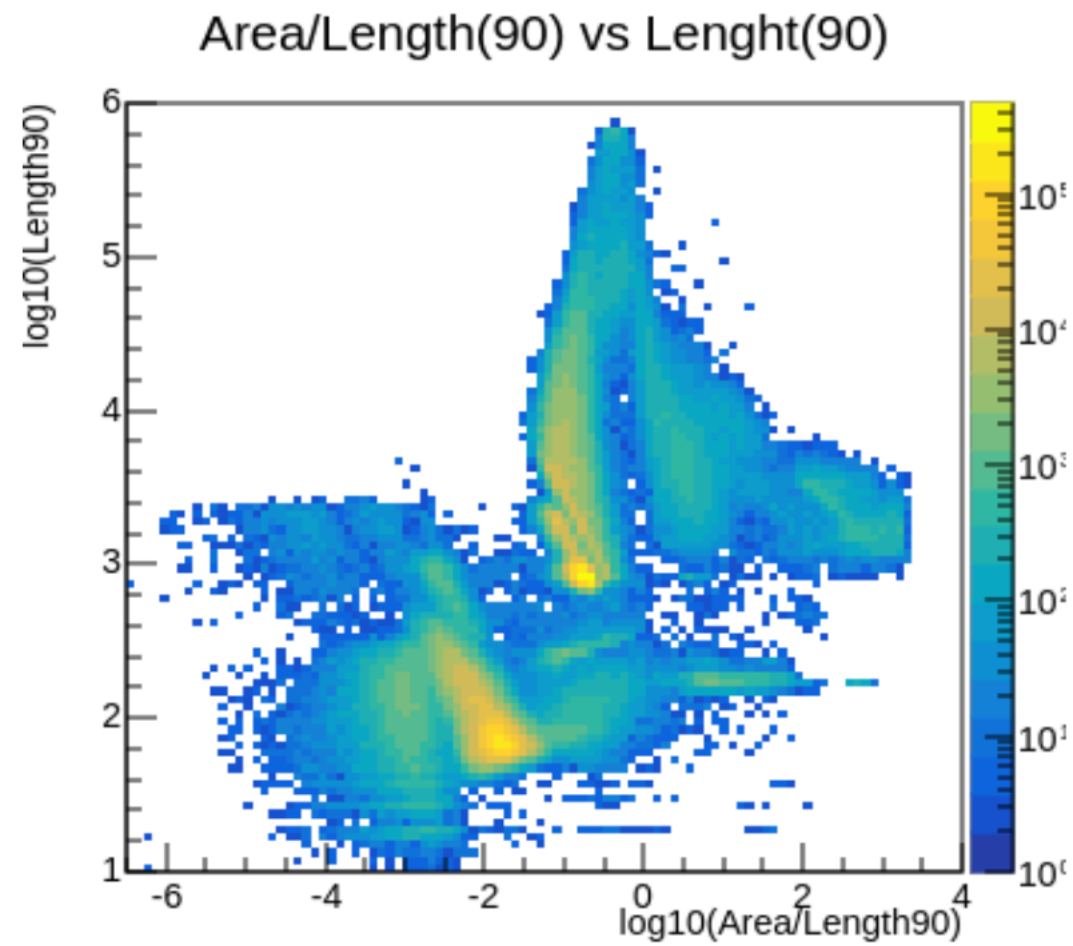


UPM

Area/Length90 vs Length90



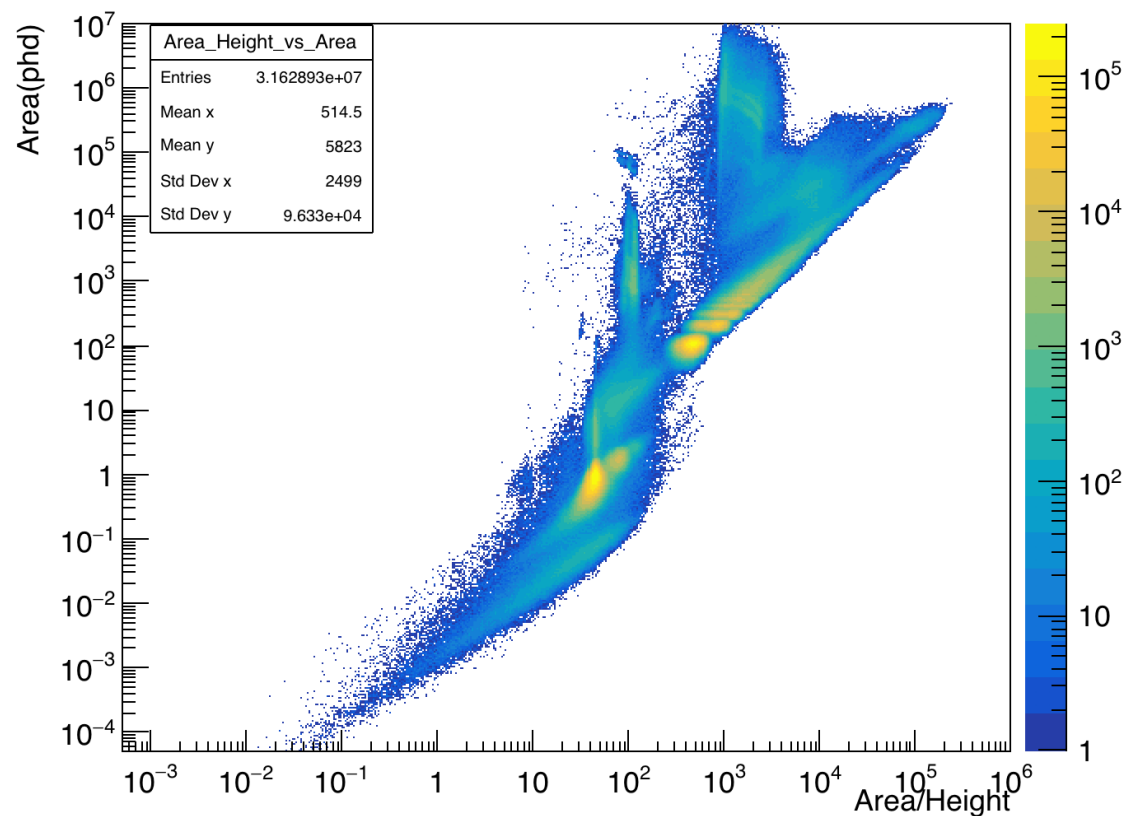
PREM



UPM

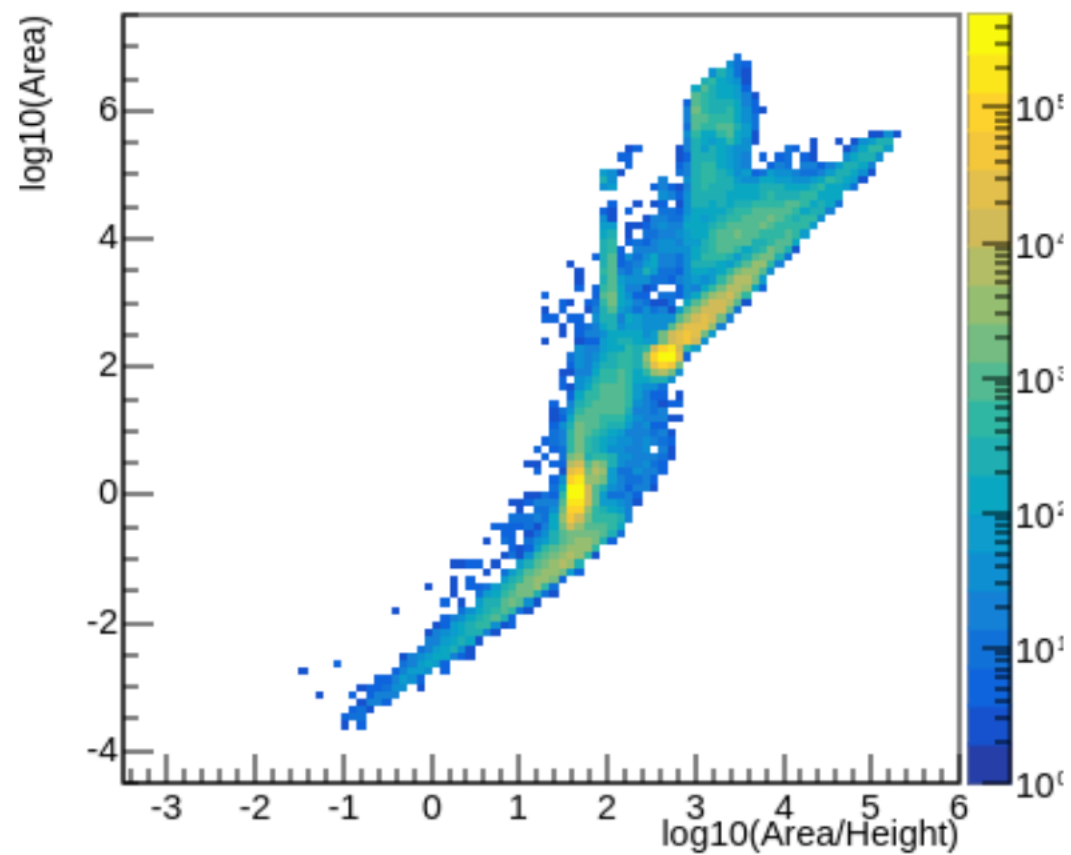
Area/Height vs Area

Area/Height vs. Area



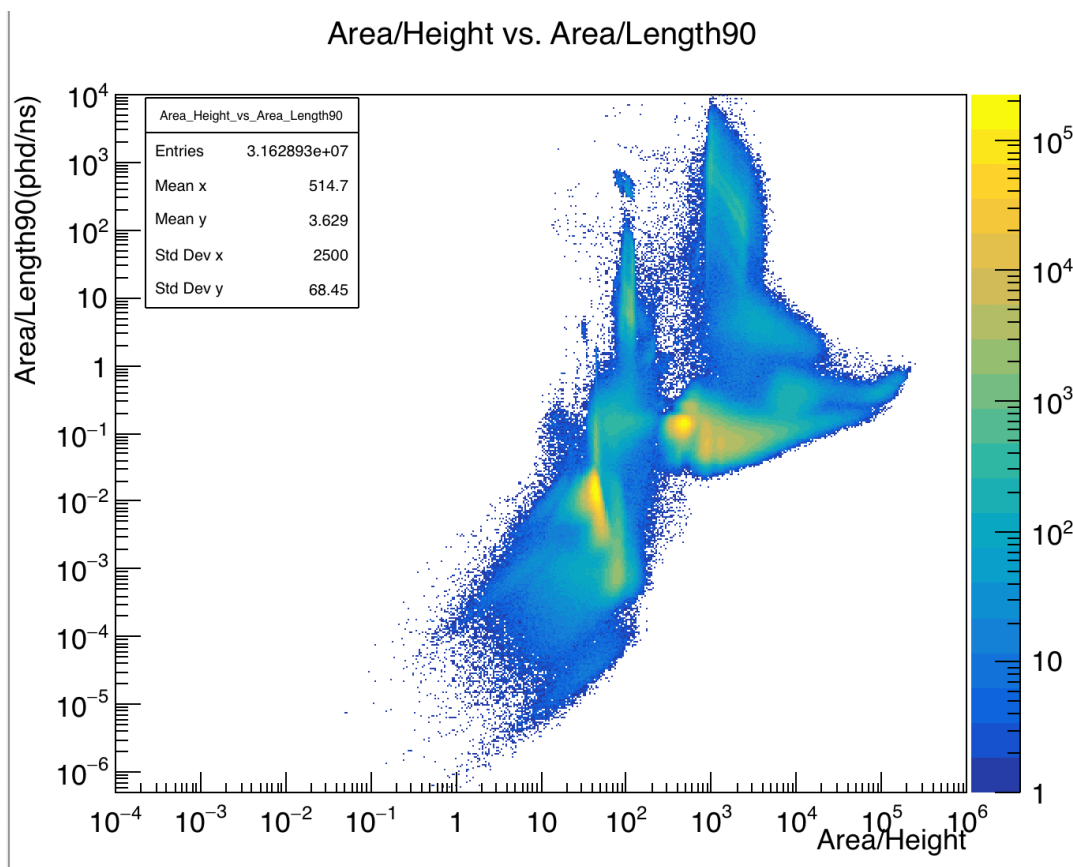
PREM

Area/Height vs Area

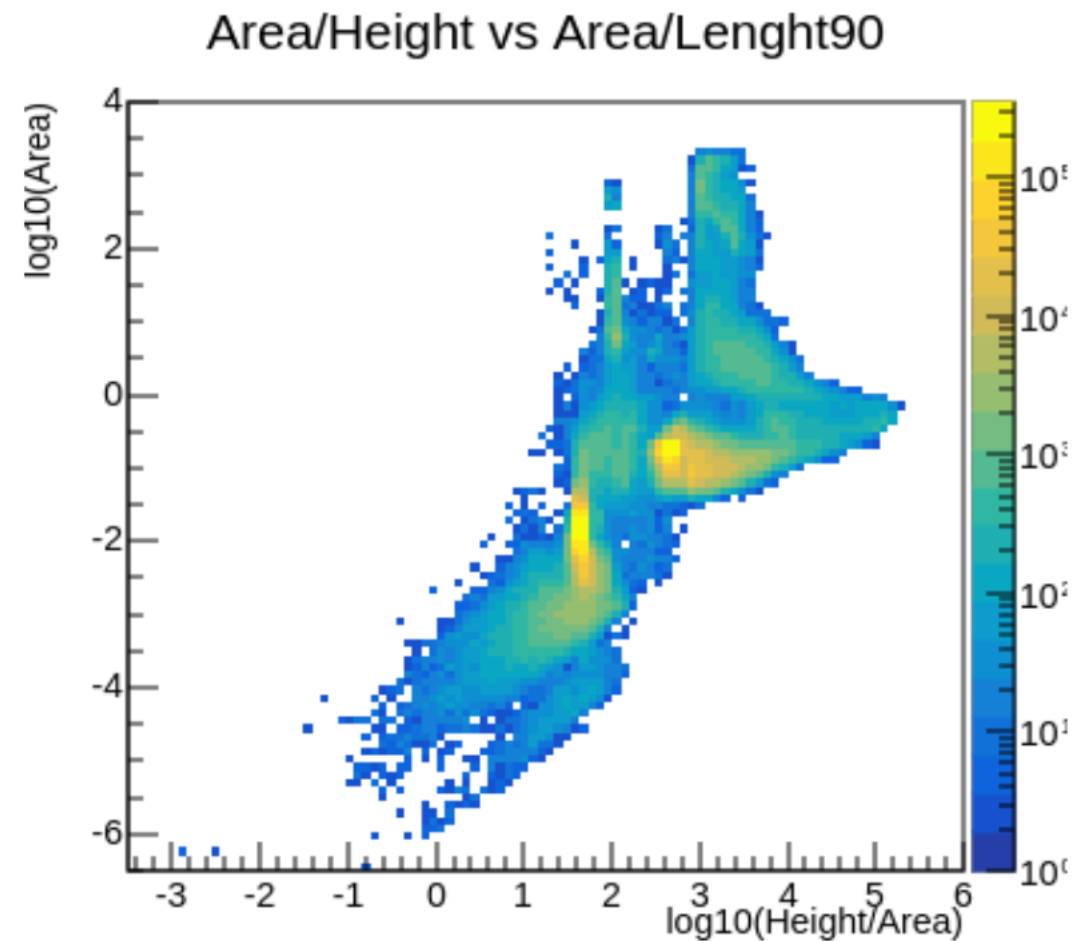


UPM

Area/Height vs Area/Length90



PREM



UPM

To do

- Clarify the RQ name of the variable **pFraction100**
- Think about the binning for Length90

18th Feb. 2021

- **1. Account:**

- LZ account: ☒
- NERSC: ☒

- **2. Code:**

- Set up cori account
- Installed Alpaca & PREM module

- **3. To do:**

- Add PREM module to Alpaca for running (environment not setting up properly?)
- Look at the Twiki page to choose a part to work on

Cori setup

- 1. Set up NERSC account and two-factor authentication (OTP) on website
- 2. Log into Cori account on terminal: `ssh user_name@cori.nersc.gov`, with password+OTP
- 3. Create a folder at: `/global/project/projectdirs/lz/users/your_username`
- 4. Set up shifter environment:
 - Write the .bashrc.ext file:
<https://luxzeplin.gitlab.io/docs/software/docs/computing/usdc/shifter.html#some-magic>
 - source .bashrc.ext
 - shifterCOS7 bash
- 5. To use git command:
 - Generate a key on cori: <https://docs.gitlab.com/ee/ssh/>
 - Add it to GitLab: <https://gitlab.com/-/profile/keys>

10th Feb. 2021

- **1. Account:**
 - LZ account: ☒
 - NERSC: in progress
- **2. Code:**
 - Installed ALPACA & PREM modules
 - Walked through PREM modules with Rachel
- **3. To do:**
 - Get the NERSC account
 - Run the code locally