

# EXP1803 - Developing #216

## Event selection for run14

07/19/2018 05:15 PM - Ivan Muzalevsky

|  |                 |                        |            |
|--|-----------------|------------------------|------------|
| <b>Status:</b>   | Открыта         | <b>Start date:</b>     | 07/19/2018 |
| <b>Priority:</b>   | Высокий         | <b>Due date:</b>       |            |
| <b>Assignee:</b>   | Ivan Muzalevsky | <b>% Done:</b>         | 0%         |
| <b>Category:</b>   | Software        | <b>Estimated time:</b> | 0.00 hour  |
| <b>Target version:</b>   |                 |                        |            |
| <b>Description</b>   |                 |                        |            |
| Create the macro for converting data from run14 into calibrated (MeV and ns) with using several event selections:  |                 |                        |            |
| <small>1) eE-ToF: F5-F3 and F3-F5<br/>2) times F3 and F5 in the same event should be roughly the same (about 20 channels max difference)<br/>3) SQX_R-[F3-F5] in reasonable borders (same for SQY_R-[F3-F5])<br/>4) Cal_R-[F3-F5] in reasonable borders<br/>5) threshold for SQX_R,SQY_L (about 2MeV as far as minimum Edep of 3H in 1mm Si det is about 2.7 MeV)<br/>6) get rid of Cal cross talks by selecting amplitudes with max value<br/>7) select events with multiplicity=1 in MWPC1,MWPC2, SQX_R,SQY_R, Csl_R</small> |                 |                        |            |
| <small>7)create graphical cuts for pictures:</small>   |                 |                        |            |
| <ul style="list-style-type: none"><li>• SQX_R:tSQX_R-tF5</li><li>• SQY_R:tSQY_R-tF5</li><li>• Csl_R:tCsl_R-tF5</li></ul>   |                 |                        |            |
| <b>RESULTS</b>   |                 |                        |            |

### History

#### #1 - 07/20/2018 12:43 AM - Bogumil Zalewski

Please take into consideration, that one can get correct tracking for higher multiplicities in MWPC. Maybe change multiplicity for cluster multiplicity for clarification?

#### #2 - 07/20/2018 11:55 AM - Ivan Muzalevsky

- Description updated

#### #3 - 07/20/2018 03:47 PM - Ivan Muzalevsky

raw data: /analysis\_nas/exp201804/rootfiles/h5\_14\_\*  
Data from MWPC,ToF, right telescope where processed

Several cuts where usedSeveral cuts for events where used:

TOF detector  
time difference between different modules F3, F5 less than 20 channels. (F3[i]-F3[j]) ToF is in borders between 100 and 200 ns

MWPC  
multiplicity in X1,Y1,X2,Y2 = 1

SQ\_R  
multiplicity in X and Y strips=1. Multiplicity = number of signals with amplitude higher than 1.5 MeV in 1 event.  
For all strips time selection where used:

For X strips [0-15] (LED-CFD)

□□

For X strips [16-31] (CFD-CFD)

tSQX\_R-tF5%2830,110%29.png

According to [this](#) only signals with maximum amplitude in one event where taken into account in the CsI detector. Also similar time selection where used for such signals:

On this picture u can see time selection (red) for crystals 4-7.

4-7timeCuts.png

After such selection de-E identification plots where obtained.

X axis: signals in chosen CsI, Y axis: signals in all SQX strips.

Selection: Amp in SQX > 1 MeV, Amp in CsI > 300 channels (any number != 0 will be the same)  
trigger = 3 (from left telescope)

4-7.png

We can find 3 bananas for H, banana for 4He, area for 6He

**#4 - 07/23/2018 04:52 PM - Ivan Muzalevsky**

- *Description updated*

**#5 - 08/20/2018 02:33 AM - Ivan Muzalevsky**

- *File drawCuts.C added*

- *File fillChain.C added*

I tried to make good selection for H5\_14. With this selection I obtained 0 coincidences of signals in left telescope with tritium detection in right one.

Theoretical prediction was so that I should find about 30 events of 3He-3H coincidences in the case if we have CD3 target.

**Files**

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|             |         |            |                 |
|-------------|---------|------------|-----------------|
| drawCuts.C  | 4.57 KB | 08/19/2018 | Ivan Muzalevsky |
| fillChain.C | 16.5 KB | 08/19/2018 | Ivan Muzalevsky |