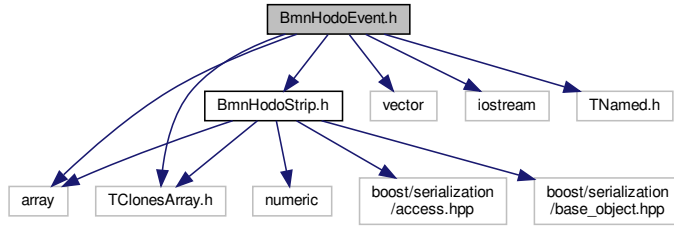


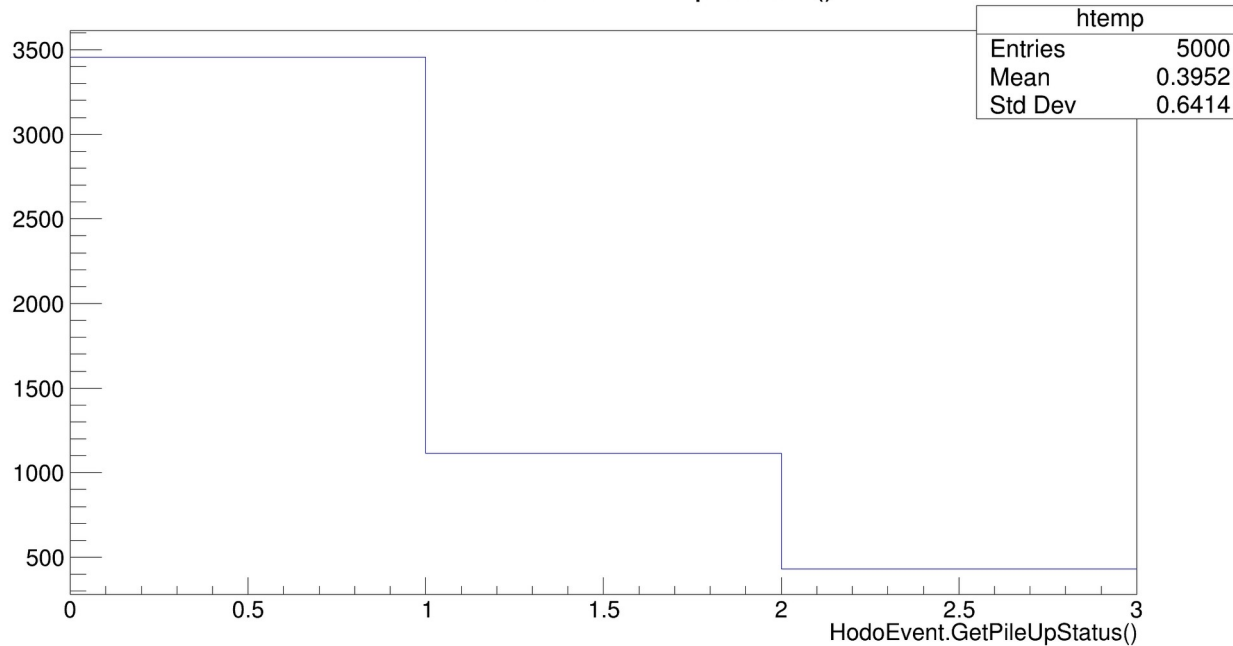
Статус подготовки программного обеспечения  
для отбора пайлапов (событий с наложением сигналов)  
и определения центральности

Николай Карпушкин  
ИЯИ РАН

Berds meeting 10 April 2024



```
enum PileUp { No, Resolved, Unresolved }
HodoEvent.GetPileUpStatus()
```



## Public Member Functions

virtual const char *	<b>GetClassName</b> ()
<b>BmnHodoStrip</b> *	<b>GetStrip</b> (uint8_t strip_id)
void	<b>SetStrip</b> (uint8_t strip_id, const <b>BmnHodoStrip</b> &strip)
float	<b>GetTotalSignal</b> () const
float	<b>GetTotalSignalIntegral</b> () const
<b>BmnHodoStrip::PileUp</b>	<b>GetPileUpStatus</b> () const
void	<b>reset</b> ()
void	<b>ResetStrips</b> ()
void	<b>SummarizeEvent</b> ()
virtual void	<b>Print</b> (Option_t *option="") const

## Static Public Attributes

```
static const int fgkMaxStrips = 16
```

## Detailed Description

Class for Bmn Hodo data container in event.

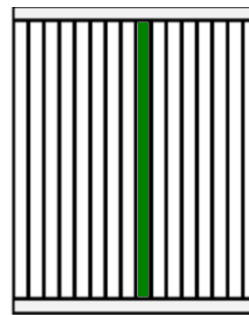
# Discussing Limits

Constrains:

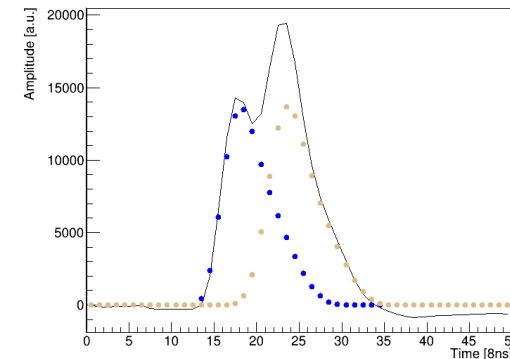
RL deconvolution iterations 100  
 R2 convergence threshold 0.01  
 Number of peaks 2



Resolving pileups  
 with time  
 difference of 50ns  
 and more

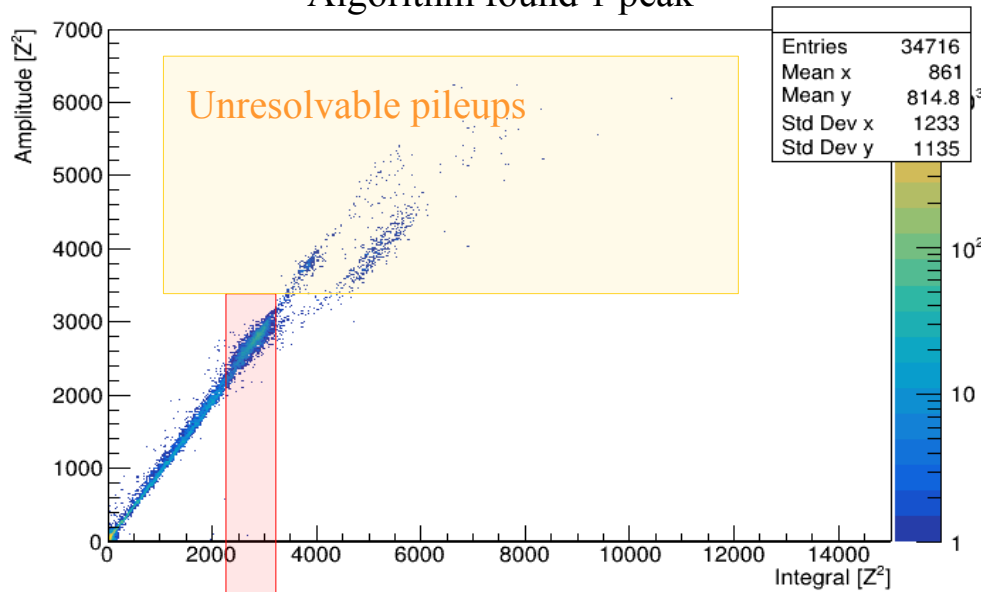


Strip #9



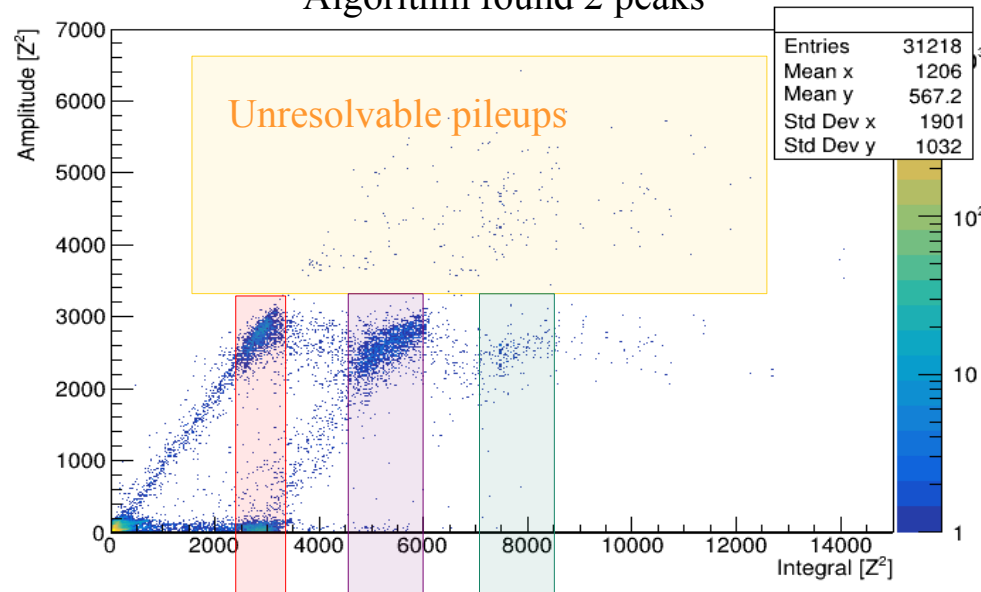
*XeCsI@3.8 AgeV Minimum bias trigger (~70% most central events)*

Algorithm found 1 peak



1 Xe

Algorithm found 2 peaks



1 Xe

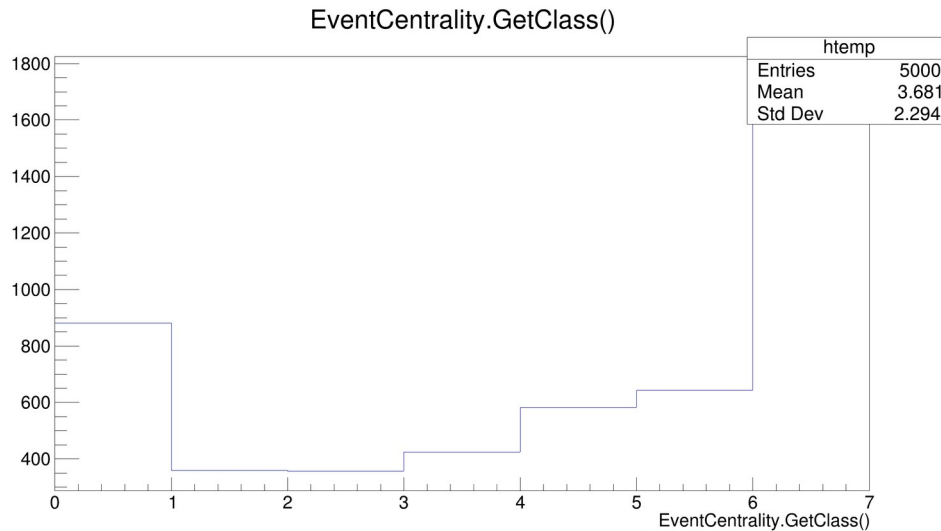
2 Xe

3 Xe

Fraction of unresolvable pileups is ~2%

## Public Member Functions

	<b>BmnEventCentrality</b> (const <b>BmnEventCentrality</b> &other)
<b>BmnEventCentrality</b> &	<b>operator=</b> (const <b>BmnEventCentrality</b> &other)
int	<b>GetClass</b> () const
float	<b>GetProbability</b> () const
const std::vector< float > &	<b>GetSoftCentrality</b> () const
int	<b>GetClass</b> (BmnCentralityClass::Method method) const
float	<b>GetProbability</b> (BmnCentralityClass::Method method) const
const std::vector< float > &	<b>GetSoftCentrality</b> (BmnCentralityClass::Method method) const
void	<b>SetCentrality</b> (int cluster_id, float probability, BmnCentralityClass::Method method)
void	<b>Reset</b> ()



## Public Types

```
enum Method { FHCaIHodo }
```

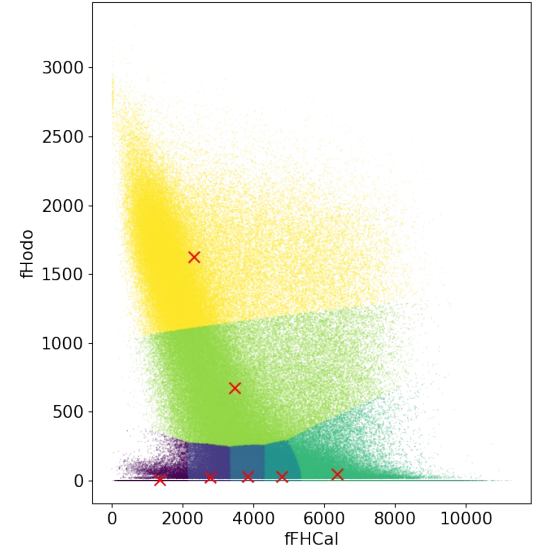
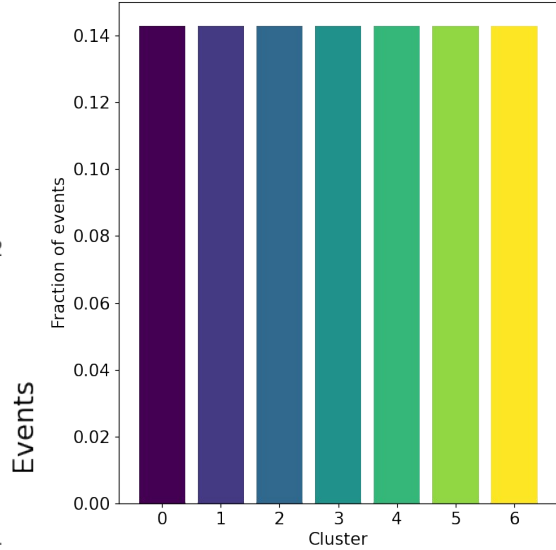
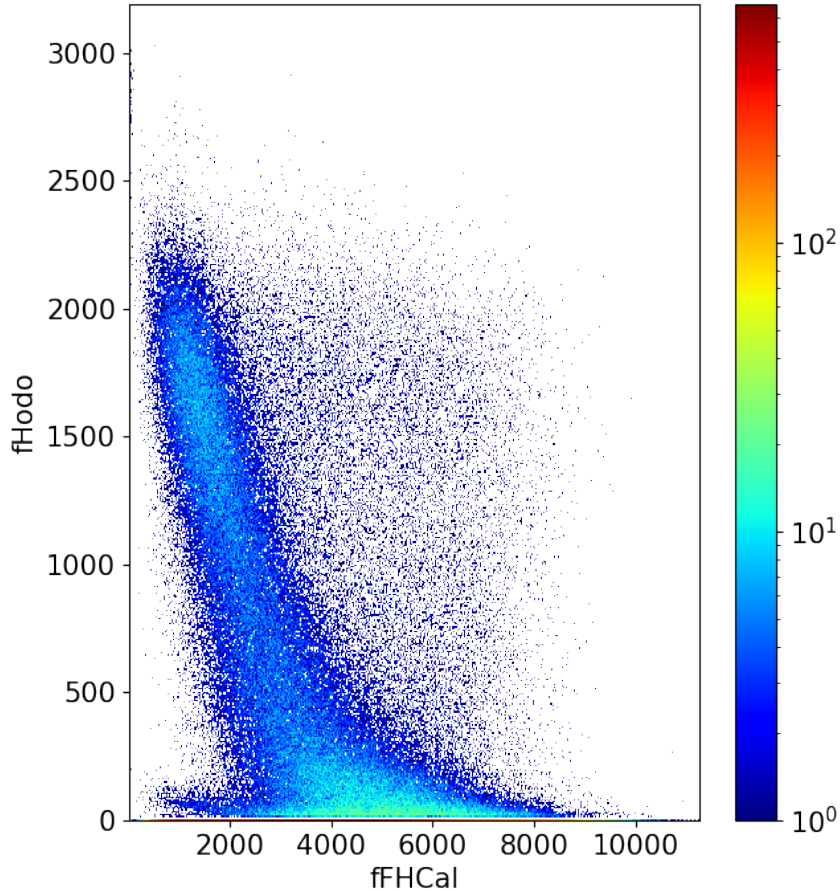
## Public Member Functions

	<b>BmnCentralityClass</b> (int index, float probability, Method method)
	<b>BmnCentralityClass</b> (const <b>BmnCentralityClass</b> &other)
	<b>BmnCentralityClass</b> ( <b>BmnCentralityClass</b> &&other)
<b>BmnCentralityClass</b> &	<b>operator=</b> (const <b>BmnCentralityClass</b> &other)
<b>BmnCentralityClass</b> &	<b>operator=</b> ( <b>BmnCentralityClass</b> &&other)
int	<b>GetIndex</b> () const
void	<b>SetIndex</b> (int index)
float	<b>GetProbability</b> () const
void	<b>SetProbability</b> (float probability)
Method	<b>GetMethod</b> () const
void	<b>SetMethod</b> (Method method)
virtual const char *	<b>GetClassName</b> ()
void	<b>reset</b> ()

# Centrality determination: FQH&FHCAL correlation

*XeCsI@3.8A GeV. MBT runs 7819, 7988, 8097*

*More than 1 track in vertex reconstruction  
1 Xe ion by BC1S integral  
Vertex position (-1.5 < Z < 1.5)*



2D normalised joint PDF are stored in a configuration file

