

# INTT レポジトリのドキュメント

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# Doxygen を使ったドキュメント作成

- [Doxygen](#): プログラムのコード等にあるコメントを使ってドキュメントを作成するツール
  - 例: ROOT
- Doxygen コマンドに設定ファイルを与えると HTML や LaTeX ファイルが生成される。
- ちょっとやってみた: [https://sphenix-intra.sdcc.bnl.gov/WWW/subsystem/intt/INTT\\_repository\\_doxygen/html/index.html](https://sphenix-intra.sdcc.bnl.gov/WWW/subsystem/intt/INTT_repository_doxygen/html/index.html)
- イベントベース TTree を作るのに使用しているクラスの説明が必要。Doxygen で作ってみてはどうでしょう？

ROOT Reference Guide

Version master

ROOT Reference Documentation

Tutorials

Functional Parts

- Core ROOT classes
- The Geometry Package
- Graphics
- GUI
- Web Widgets
- Web Display

Histogram Library

- Painting classes
- Histogram classes.
- Graph classes.
- TGraph**
- TGraph2D
- TGraph2DAsymmErrors
- TGraph2DErrors
- TGraphAsymmErrors
- TGraphBentErrors
- TGraphDelaunay
- TGraphDelaunay2D
- TGraphErrors
- TGraphMultiErrors
- TGraphTime
- TMultiGraph
- TPolyMarker
- TScatter

Function classes.

- ROOT 7 histogram classes.
- Advanced spectra processing
- TUnfold classes
- TBackCompFitter
- TBinomialEfficiencyFitter
- TConfidenceLevel
- TEfficiency
- TFitResult
- TFormula
- ROOT::v5::TFormula
- ROOT::v5::TFormulaPrimitive
- THbookBranch
- THbookFile
- THbookKey
- THbookTree
- THnBase
- THnSparse
- TKDE
- TLimit
- TMultiDimFit
- TPrincipal
- TProfile2PolyBin
- TSpline
- TSpline3
- TSpline5
- TSplinePoly

## TGraph Class Reference

Histogram Library > Graph classes.

List of all members | Public Types | Public Member Functions | Static Public Member Functions | Protected Member Functions | Static Protected Member Functions | Protected Attributes | List of all members

A **TGraph** is an object made of two arrays X and Y with npoints each.

The **TGraph** painting is performed thanks to the **TGraphPainter** class. All details about the various painting options are given in this class.

**Notes**

- Unlike histogram or tree (or even **TGraph2D**), **TGraph** objects are not automatically attached to the current **TFile**, in order to keep the management and size of the **TGraph** as small as possible.
- The **TGraph** constructors do not have the **TGraph** title and name as parameters. A **TGraph** has the default title and name "Graph". To change the default title and name **SetTitle** and **SetName** should be called on the **TGraph** after its creation. **TGraph** was a light weight object to start with, like **TPolyline** or **TPolyMarker**. That's why it did not have any title and name parameters in the constructors.

**Example**

The picture below gives an example:

```
{
double x[100], y[100];
int n = 20;
for (int i=0; i<n; i++) {
    x[i] = i*0.1;
    y[i] = 10*sin(x[i]+0.2);
}
auto g = new TGraph(n,x,y);
g->SetTitle("Graph title;X title;Y title");
g->Draw("AC*");
}
```

Graph title

**Default X-Points**

If one doesn't specify the points in the x-axis, they will get the default values 0, 1, 2, 3, (etc. depending on the length of the y-points):

ROOT master - Reference Guide Generated on Tue Jul 25 2023 08:59:17 (GVA Time) using Doxygen 1.9.8



# Doxygen を使ったドキュメント作成：例

INTT repository  
Explanations are available for some macros.

Main Page | Related Pages | **Namespaces** | Data Structures | Files

Namespace List | Namespace Members

INTT repository

- README
- How to run
- Todo List
- Namespaces
- Data Structures
  - CLHEP
  - dam
    - felix\_readout\_calib\_packv5
    - felix\_readout\_pedestal
    - felix\_readout\_pedestal\_chengwei
    - felix\_readout\_pedestal\_chengwei\_v1
    - felix\_readout\_pedestal\_chengwei\_v2
    - felix\_readout\_sanlty\_check
    - intt
    - INTT\_commissioning\_logger
    - INTT\_control\_panel
    - intt\_ext**
    - INTT\_misc
    - mokka
    - process\_commissioning\_data
    - PSQL\_for\_cabling\_cal
    - ROOT
    - analyzer
    - bad\_ch\_info
    - BeamParameter
    - CalHit
    - cell\_ids
    - cell\_info
    - CGAGeometryEnvironment
    - cu\_info
    - cluster\_reformat\_str
    - cluster\_str
    - Control
    - Database
    - DetectorMessenger
    - DIR
    - dirent
    - DUT\_str
    - EDActionInitialization
    - EDChamberHit
    - EDChamberSD

```
def intt_ext.take_data ( take_data = True,
                        mode = "calibration",
                        fphx_parameters = None,
                        customize_dac0 = False,
                        customize_dac = False,
                        mask_channel = False,
                        does_scp = False,
                        mask_felix_ch = False,
                        is_rcdaq = False,
                        is_gtmcplib = True,
                        output_name = None,
                        output_dir = None,
                        measurement_time = None,
                        verbosity = 0,
                        help = False
                    )
```

**Parameters**

<b>take_data</b>	A flag to do the DAQ loop or not. The default is True. For RCDAQ, give False.
<b>mode</b>	'calibration' (default) or 'self' are available.
<b>fphx_parameters</b>	None (default) not to do anything, a path to a file (see send_fphxparam_from_file), or list of commands, which have to be integer, are allowed.
<b>customize_dac0</b>	A flag to apply the individual DAC0 setting (True) or do nothing (False, default)
<b>customize_dac</b>	A flag to apply the individual DAC setting (True) or do nothing (False, default). NOT READY.
<b>mask_channel</b>	A flag to mask channels using Cheng-Wei's map (True) or do nothing (False, default).
<b>does_scp</b>	A flag to send the data file to inttdev (True) or do nothing (False, default).
<b>mask_felix_ch</b>	A flag to disable FELIX channels using Cheng-Wei's map (True) or do nothing (False, default).
<b>is_rcdaq</b>	A flag to switch RCDAQ mode (True).
<b>is_gtmcplib</b>	
<b>output_name</b>	
<b>measurement_time</b>	in sec
<b>verbosity</b>	An integer to show more information on your terminal. It's from 0 (default, minimum) to ?
<b>help</b>	

**Return values**

Definition at line 1042 of file intt\_ext.py.

```
def intt_ext.threshold_setting ( d,
                                threshold
```

felix/intt\_ext.py の take\_data 関数  
run.py はこれで INTT の設定を行っている。

INTT repository  
Explanations are available for some macros.

Main Page | Related Pages | Namespaces | **Data Structures** | Files

Data Structures | Data Structure Index | Class Hierarchy | Data Fields

InttEvent Class Reference

```
#include <InttEvent.h>
```

Inheritance diagram for InttEvent:  
Collaboration diagram for InttEvent:

**Public Member Functions**

```
InttHit * addHit ()
void clear ()
void copy (InttEvent *org)
InttHit * getHit (const InttHit)
int getNHits ()
InttEvent ()
void show ()
void sort ()
virtual ~InttEvent ()
```

**Data Fields**

```
Long64_t boe
int evtSeq
TClonesArray * fHitArray
int fNhits
```

**Detailed Description**

Definition at line 52 of file InttEvent.h.

**Constructor & Destructor Documentation**

```
InttEvent::InttEvent ( )
Definition at line 95 of file InttEvent.cc.

InttEvent::~InttEvent ( )
Definition at line 100 of file InttEvent.cc.
```

**Member Function Documentation**

```
InttHit * InttEvent::addHit ( )
Definition at line 105 of file InttEvent.cc.

void InttEvent::clear ( )
```

general\_codes/hachiya/InttEventTree の InttEvent クラス  
現在のイベントベース TTree はこのクラスを使っている (はず)

# 考えるべき点

- どこにドキュメントを公開するのか？
  - sphenix-intra.sdcc.bnl.gov? アクセスが面倒
  - GitHub 内? できるけど結構面倒
- 誰がメンテナンスするのか？
  - GitHub 内にドキュメントを作るなら自動化はそれほど難しくはないはず  
(そもそも GitHub 内を使うのが難しい)
  - SDCC 内にドキュメントを作るなら、自動化はちょっと難しい  
(レポジトリの更新を捉えるのが難しい、普通のアカウントでは cron が使えない)
  - 手動ならなんとでもなるけど面倒
- Doxygen に沿ったフォーマットは？
  - 糠塚が見本を提供すれば良い