

# Table of Contents

<b>Garfield on the Grid.....</b>	<b>1</b>
Background information.....	1
Instructions.....	1
Setup.....	1
Ganga manual.....	1
Usage example.....	1
Getting job output.....	1
Atlas MDT Example (Muon Chambers).....	2

# Garfield on the Grid

Garfield is a computer program for the detailed simulation of two- and three-dimensional drift chambers.

See Garfield homepage [↗](#).

## Background information

- Garfield application runs currently in **geant4 VO**
- Garfield executable and libraries are **installed on-the-fly via the input sandbox**.
- The work area on AFS is: `/afs/cern.ch/sw/arda/install/Garfield:`
  - ◆ `install`: Garfield installation
  - ◆ `examples`: examples and test area for ARDA team
  - ◆ `user`: test area for Garfield users and developers
  - ◆ `Garfield.ini` : ganga configuration file
  - ◆ `scripts` : ganga scripts for Garfield (`submit_garfield.py`)

The good starting point is `/afs/cern.ch/sw/arda/install/Garfield/examples/example1`. Copy it to your work area.

## Instructions

### Setup

- Put Ganga in your path and point it to the correct configuration (see also: <http://cern.ch/ganga/install> [↗](#))
  - ◆ `export PATH=/afs/cern.ch/sw/ganga/install/4.2.11/bin:$PATH`
  - ◆ `export GANGA_CONFIG_PATH=/afs/cern.ch/sw/arda/install/Garfield/Garfield.ini`
- Make sure you have the certificate or a proxy for the VO! more info needed
- Login to lxplus

### Ganga manual

- tutorial: <http://cern.ch/ganga/user/html/GangaIntroduction> [↗](#)
- more documentation: <http://cern.ch/ganga/user/index.html> [↗](#)

### Usage example

- this example requires that you have `./generator_ArCO2` in your current working directory
- submit ten jobs to LSF
  - ◆ `ganga submit_garfield.py ./generator_ArCO2 1 10 LSF`
- submit 5 jobs to the Grid with cpu limit  $\geq 10$  hours (600 minutes)
  - ◆ `ganga submit_garfield.py --cputime=600 ./generator_ArCO2 15 20 LCG`
- additional files may be specified with `--infile=FILE1,FILE2`
- by default the `/afs/cern.ch/sw/arda/install/Garfield/scripts/submit_garfield.py` is used
- you can use a local copy of this script if you specify a path to it: `ganga ./mydir/submit_garfield.py ....`

### Getting job output

- start `ganga` and select the job:
  - ◆ `j=jobs[i]`
- the output directory is printed like this:
  - ◆ `print j.outputdir`

- you can list the directory like this:
  - ◆ `!ls -l $j.outputdir`
- you can inspect the files in the outputdir like this:
  - ◆ `j.peek()`
  - ◆ `j.peek('file')` (the output files will most likely be in the tarball)

## Atlas MDT Example (Muon Chambers)

This runs a generator with a background.

```
cd /afs/cern.ch/sw/arda/install/Garfield/examples/exemplemdt
```

```
ganga submit_garfield.py --infile=dist_ex.gas,mdt-res.gas ./generator_mdt_bkg 1 10 LSF
```

\*.hist are produced by the jobs, concatenate them into a single file `total-mdt-res-bkg.hist`

```
run ./garfield-9
```

```
Main: < plotmdt
```

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<https://twiki.cern.ch/twiki/bin/view/ArdaGrid/GarfieldGridInstructions>

-- JakubMoscicki - 07 Mar 2007

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