

# Event Display

Thursday, July 30

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1st R3BRoot Development Workshop  
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GSI, Darmstadt



- How to start event display
- How to visualise tracks / points / hits
- Exercise with GUI



- Based on TEve package from ROOT
- 3D visualisation of detector geometry
- Particle trajectories (if enabled in the simulation)
- Monte Carlo points (if derived from FairMCPoint)
- Detector hits (if derived from FairHit)



- Enable in r3bsim.C

```
// Event display (store trajectories)  
Bool_t fEventDisplay = kTRUE;
```



- `r3broot/macros/r3b/eventDisplay.C`



- // Run object and Runtime Database

```
FairRunAna *fRun= new FairRunAna();
```

```
FairRuntimeDb* rtdb = fRun->GetRuntimeDb();
```

```
FairParRootFileIo* parIo1 = new FairParRootFileIo();
```

```
parIo1->open("r3bpar.root");
```

```
rtdb->setFirstInput(parIo1);
```

```
rtdb->print();
```



- // Input / output files

```
fRun->SetInputFile("r3bsim.root");  
fRun->SetOutputFile("test.root");
```



- // Event manager

```
FairEventManager *fMan= new FairEventManager();
```





- // Trajectories and detector points

```
FairMCTracks *Track = new FairMCTracks ("Monte-Carlo Tracks");
```

```
FairMCPointDraw *LandPoints = new FairMCPointDraw ("LandPoint", kOrange,  
kFullSquare);
```

```
fMan->AddTask(Track);
```

```
fMan->AddTask(LandPoints);
```



- // Start the event display

```
fMan->Init();
```



- `root -l eventDisplay.C`



# Draw detector hits

- Data class has to derive from FairHit
- Implementation is in the FairHitDraw and FairBoxSetDraw
- Data is selected using the name of the branch in the output file

```
FairHitDraw *landHits = new FairHitDraw("LandHit", 1);
```



# Draw reconstructed tracks

- Similar to drawing MC trajectories using FairMCTracks task
  - ➔ Connect detector measurements with straight segments
  - ➔ Calculate track propagation to interpolate a trajectory



- Exercise with Event Display GUI