

# Overview & Software Progress

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Hall A Data Analysis Workshop  
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# Outline

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# User-driven Software Development

- Hall A staff will maintain current core analyzer
- New features expected to be **user-contributed**
  - Detectors, apparatuses, etc.
  - Improved algorithms

# Communication, Coordination

- More effective workshops
- Analysis **bulletin board** (“forum”) on Web
- Improved **analysis resources** Web pages
- Identify and list **contact person** for each experiment’s analysis
- **Analysis Team** (Ole, Bob M., Doug, John A.) will coordinate

# Workshop Format

- **Tutorials** on common analysis topics by experts
- Technical presentations from **all** active experiments
- Full-day workshop at **every** collaboration meeting

# Software Progress

# Accomplishments

- BigBite Track Reconstruction (OH)
- BigBite Optics (Jin Huang)
- Generic Online Replay Scripts (Jin Huang)
- BigBite Event Display (Miha Mihovilovic)
- Podd 1.5 (OH)

## New in Podd 1.5

- Expanded database capabilities (arrays, strings)
- Extended detector maps (reference channels)
- Restructured helicity classes
- Support for ROOT 5.18
- Bugfixes (split runs, formulas, output)
- Speed improvements (output)

Well-working “beta” version in CVS now, on Web in mid-June



# Example Database File

```

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B.mwdc.planeconfig = u1 u1p x1 x1p v1 v1p \
                    u2 x2 v2 \
                    u3 u3p x3 x3p v3 v3p

B.mwdc.cratemap =  3    6    21    1877    500    96 \
                  4    4    11    1877    500    96 \
                  4    17   24    1877    500    96

B.mwdc.nwires      = 200
B.mwdc.ul.nwires   = 141

B.mwdc.size        = 2.0  0.5  0.0
B.mwdc.xl.size     = 1.4  0.35 0.0

Tuesday December 11, 2007                        db_B.mwdc.dat                                1/1

```

# Code Example: Database Request

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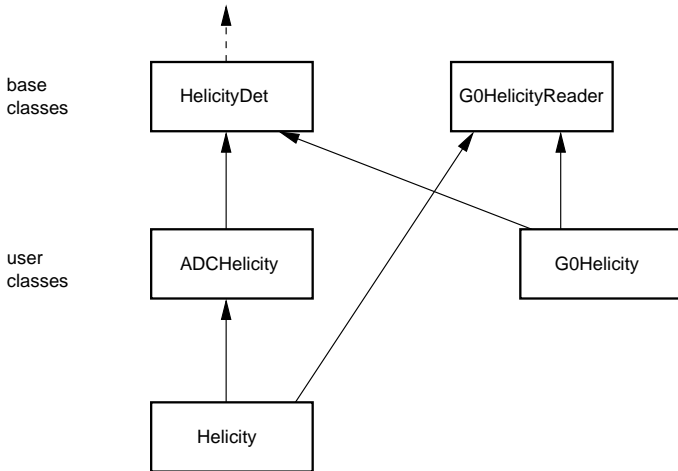
```
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FILE* file = OpenFile( date );

vector<vector<Int_t> > *cmap = new vector<vector<Int_t> >;
string planeconfig;
Int_t time_cut = 1, pairs_only = 0, mc_data = 0;

DBRequest request[] = {
  { "planeconfig", &planeconfig, kString },
  { "cratemap",    cmap,          kIntM,    6 },
  { "timecut",    &time_cut,    kInt,     0, 1 },
  { "pairsonly",  &pairs_only,  kInt,     0, 1 },
  { "MCdata",    &mc_data,     kInt,     0, 1 },
  { 0 }
};
Int_t err = LoadDB( file, date, request, fPrefix );
fclose(file);

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```

# New Helicity Class Hierarchy



# Split Runs

## Split Run Example

```
THaRun* r1 = new THaRun( "/data1/e01001_1000.dat.0" );  
THaRun* r2 = new THaRun( "/data2/e01001_1000.dat.1" );  
analyzer->Process( r1 );  
analyzer->Process( r2 );
```

- Directories must be same or end with `dataN`
- Old/alternative methods still work
- Could be further improved (single object for group of runs)

## Unfinished in Podd 1.5

- Global beam helicity (`fEvtHdr.fHelicity`)
- Convert clumsy database readers of standard detectors to new, simplified `LoadDB` interface (`easy`)

# Ideas for Nontrivial Improvements

- Performance of `THaOutput`
- VDC track reconstruction (build on BigBite experience)
- Abstract database interface (with SQL backend)
- Convert to use `TTimeStamp`
- Shower cluster analysis
- EPICS fitter (time evolution of slow control data)
- Multi-threaded processing
- Documentation (esp. `User's Guide`)

Volunteers most welcome