

RdExtension

- AugerPrime now contains extension of SDS with Radio :)
- UUB allows extension via digital port (drivers, connecting to FPGA)
- Rd Extension foresees small front-electronic board for:
 - Analog (amplify/filter)
 - ADC
 - Small FPGA (Lattice) for buffering/communication to UUB-FPGA
 - Rd receives trigger from UUB and sends data
 - Small amount of calibration/monitoring data via SPI bus

Rd data for AERA

- Parallel DAQ (@Co) writing binary files
- AERARootIOLib:
 - to convert to root-files and
 - to merge with xad files
 - read-in in root (RadioFileAERARoot.h)
- Reader requires Detector-description to know the channels in the data (offline crashes if RDS not defined)

```
/* Implementation file to open a Radio data file in root AERA format

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\version $Id: $
*/

#ifndef _io_RadioFileAERARoot_h_
#define _io_RadioFileAERARoot_h_

#include <TFile.h>
#include <io/VROOTFile.h>
#include <string>
#include <RadioFileIO.h>
#include <TBranch.h>

static const char CvsId_io_RadioFileAERARoot[] =
"$Id$";

namespace io {

class RadioFileAERARoot : public VROOTFile {
public:
RadioFileAERARoot();
RadioFileAERARoot(const std::string& theFilename, const Mode theMode = eRead, const utl::Branch* b = 0);
virtual ~RadioFileAERARoot() { }

void Open(const std::string& theFilename, const Mode theMode = eRead, const utl::Branch* b = 0);

void Close();

void Print();

Status Read(evt::Event& theEvent);
void Write(const evt::Event& theEvent);
Status FileStatus();
Status FindEvent(const unsigned int eventId);
Status GotoPosition(const unsigned int position);
int GetNEvents();

private:
int fCurrentEvent;
int fCountEvent;
RadioFileIO *fRadioFileIO;
TTree* fIOLibTree;
TBranch *fIObranch;
bool fHasFileOpen;
bool fIsFirstevent;
std::string fSourceFileName;
};
}

```

RdExtension

- Data integrated on FPGA-level (before linux)
- Extension from 5 to 6 double PMT (10 → 12 channel)
- Rd is planned to contain 2048 samples (1024 option)
- Extension of CDAS to 12 Channels required
- New read-in integrated in SD read-in
- Simple (?) extension of SD read-in for the Rd-channels
- Switch from time-dependent detector-description DB to static xml?
AugerPrime-Rd like Sd not station-dependent
- LNA calibration via detector-description?