

Detector Characterization

KAGRA face to face meeting

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Contents

- Introduction (Yokozawa)
- DetChar system (Yokozawa)
- collaboration with Korea and LSC(Yamamoto)
- Report of violin mode (Yuzurihara)
- Report of globally correlated magnetic noise (Nishizawa)

Concept of DetChar group

- Developing tools with co-operation of detector member
 - Smooth work when commissioning
 - Develop useful tools for everyone
- Preparation for observation
 - Monitors for stationary/non-stationary noise
 - Data quality check (DQF)
 - Realtime study on possible noise source
 - noise study which affects detector sensitivity

DetChar subgroup

KAGRA chief meeting



DetChar weekly meeting



DetChar subgroup

- Report DetChar group progress
- Comments/suggestion to/from other group

- Report from subgroup leader
- Announce and discussion
- Pick up requests of DetChar group

DetChar Project		
Glitch Monitor	Line Monitor	...
Leader	Leader	...
Analysis member	Analysis member	...
Detector member	Detector member	...
DetChar member	DetChar member	...
...

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Development of software

- Software for System
 - Continuous progress during operation, realtime process
 - Simple, stably and not need to maintenance
 - Pick up from tools
- Software for Tools
 - Develop individually (accept any language)
 - Easy to use, useful for all users
 - Make manual ,sample codes and algorithm for users
- Important to develop useful tools.

DetChar project

Primary Projects

- Detchar base system
- Glitch Monitor
- Line Monitor
- Gaussanity Monitor
- Noise Budget
- Health Monitor
- Data base
- Quality flag

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Special Projects

- Globally correlated noise
- Violin mode
- Newtonian Noise
- Multi-Channel Analysis
- Observation shift

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One project includes

- Leader
- Analysis group member (≥ 1 person)
- Detector group member (≥ 1 person)
- DetChar member (≥ 1 person)

Main worker is DetChar Member

Help, advise and so on from analysis/detector member

Primary project

- Glitch Monitor

- Glitch detection
 - Main algorithm would be excess power method
 - Omega, Omicron, KleinWelle, ExcessPower, GlithMon ...
- Statistics
 - frequency and time of Glitches
- Characterization
 - duration, central frequency, power, etc ...
- Coherency check
- Show analysis result by monitor, graph

Primary project

- Line Monitor

- Line detection
 - Basic algorithms are SFT, Monochromatic wave fitting
 - Development of new tool
 - Hilbert-Huang Transform (HHT)
- Statistics
 - frequency and time of Lines
- Characterization
 - duration, central frequency, power, etc ...
- Coherency check
- Show analysis result by monitor, graph

Primary project

- Gaussianity Monitor

- Noise floor tracking
 - Check spectrum of noise floor
 - Noise floor Monitor
- Power spectrum
- Rayleigh distribution tracking
- Realtime noise modeling
 - Fitting by student-t distribution
- Monitor display

DetChar weekly meeting

- Tuesday 10:00 - (weekly; Japanese)
- Tuesday 11:30 - (bi-weekly; Korea and Japan joint)
- SeeVogh
- Welcome to join, let's discuss and make useful tools and monitors.