Plan of measurement for subtraction of Schumann resonance

Purpose

Schumann resonance could be a problematic magnetic noise source for the detection of stochastic GW background because of its coherence length (~ a few 1000km). We are developing a method based on Wiener filtering to reduce the effect under the LIGO-Virgo-KAGRA collaboration.

The measurement is for testing the proposed Wiener filtering algorithm to subtract the Schumann resonance from data.

Methodology

- Place two magnetometers at the same location around Virgo . One is for generating a Wiener filter and the filter is applied to the other.
- Do the same thing at KAGRA.
- See coherence of both Wiener filtered data.

http://arxiv.org/abs/1606.01011

Measurement

- Virgo site
  - ADU-07, MFS-06x4
  - And else?
- KAGRA site
  - ADU-07x3, MFS-06x4, MFS-07x2
  - GPS clock, GPS NTP server, high-frequency magnetometer for following up

Reference:
MFS-07e

http://www.geo-metronix.de/mtxgeo/index.php/mfs-07e-sensors-menu

MFS-06e

http://www.geo-metronix.de/mtxgeo/index.php/mfs-06e-sensors-menu

Schedule

- **20 July**
  Participants will arrive at Toyama
- **21 July**
  - **Morning : Setting up instruments**
  - **Afternoon : Starting measurements**
- **22 July**
  - **Afternoon : finishing measurements**
  - **Afternoon : We may try mes. Inside-outside KAGRA for ~1 hour if available.**

KAGRA site (near center)

KAGRA site (near Yend)

Other candidate

TODO

- Schedule for communicating LIGO-Virgo people during the measurements.
- Finalization of the place of measurements
  - Approval from owner of the place if needed
- Preparation for the measurement
  - What do we need in addition to the sensor etc?