

*LIGO Laboratory / LIGO Scientific Collaboration*

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**aLIGO HEPI Control Implementation Procedure**

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Distribution of this document:  
Advanced LIGO Project

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## *Introduction*

## Control validation

### 1.1 Blend Filters

The blend filters presented below were designed by Richard Mittleman for LASTI. The goal is to obtain a good compromise between noise injection and common rejection at low frequencies. As an example, only one direction is plotted in this report.

**The filter is committed in the SVN at:**

/SeiSVN/seismic/HEPI/M1/HAMX/Scripts/Control\_Scripts/release/HEPI\_Blend\_Filters\_020713.mat

**Scripts files for processing and plotting in SVN at:**

/SeiSVN/seismic/HEPI/M1/HAMX/Scripts/Control\_Scripts/release/  
 - Step\_5\_Blend\_Filters\_M1\_HEPI\_HAMX.m

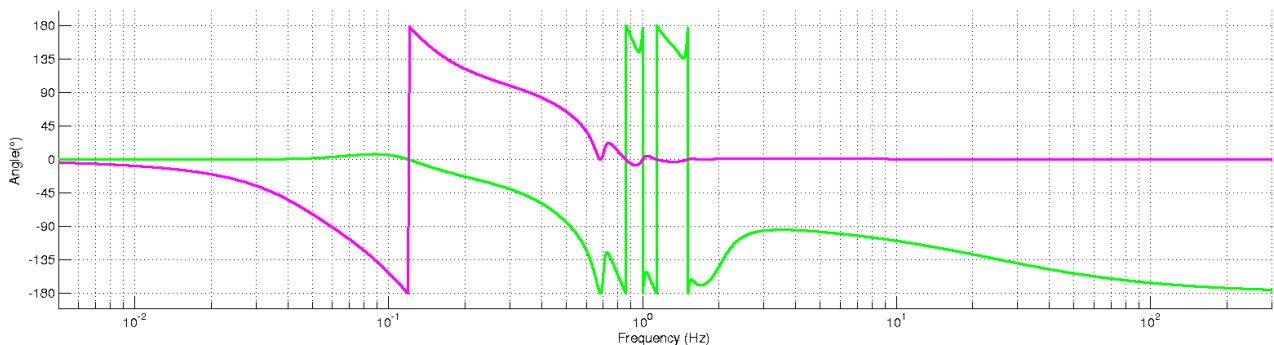
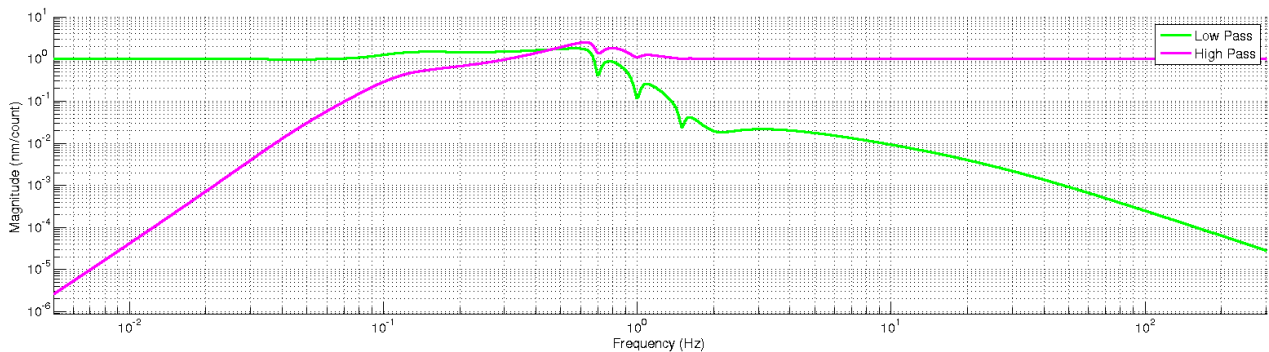
**Figures in SVN at:**

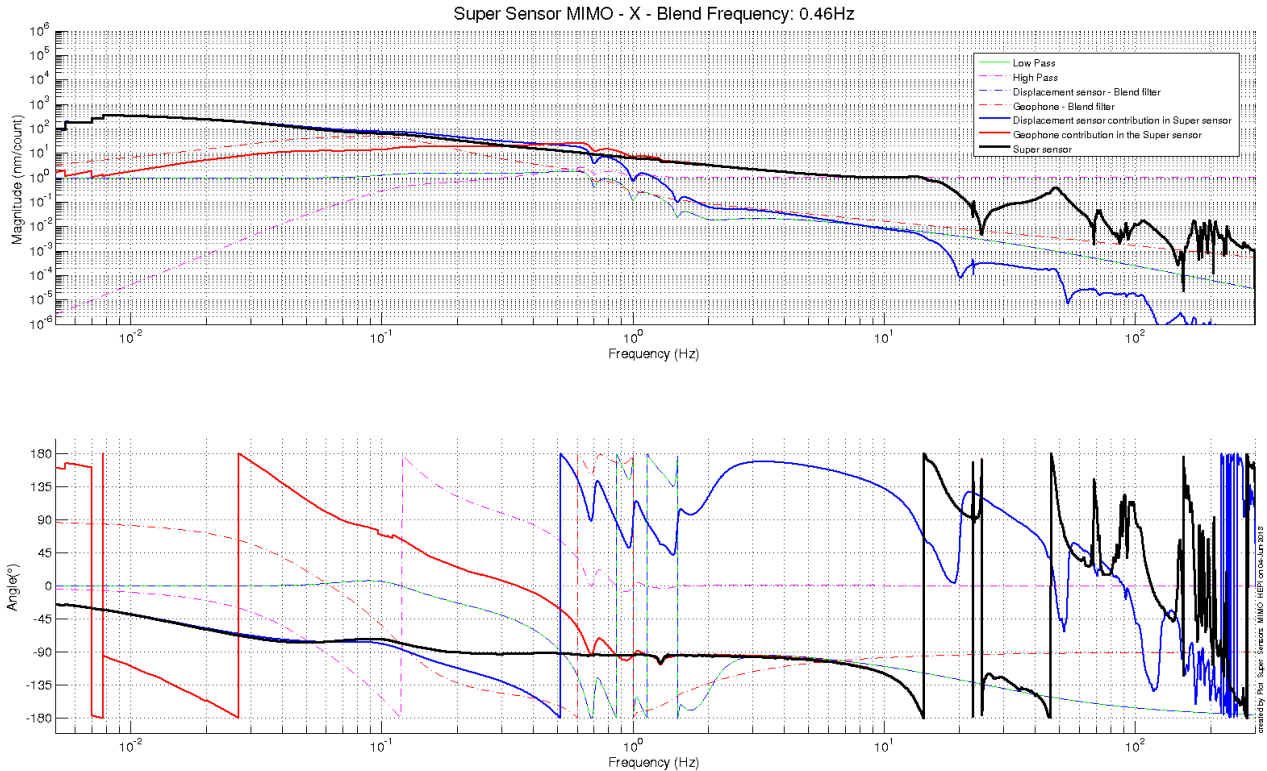
/SeiSVN/seismic/HEPI/M1/HAMX/Data/ Figures/Transfer\_Functions/Simulations/Super\_Sensors/

- M1\_HPI\_HAMX\_Super\_Sensor\_SISO\_X\_Blend\_Freq\_0.46Hz.fig
- M1\_HPI\_HAMX\_Super\_Sensor\_MIMO\_X\_Blend\_Freq\_0.46Hz.fig

**Storage of measured transfer functions in the SVN at:**

/SeiSVN/seismic/HEPI/M1/HAMX/Data/Transfer\_functions/ Simulations/Super\_Sensors/  
 - M1\_HPI\_HAMX\_TF\_C2C\_SS\_Blend\_03\_2013p.mat





## 1.2 Isolation Loops

Those isolation filters (level 2 UGF ~25 Hz) were designed by Rich Mittelman and have been used at LASTI.

As an example, only one direction is plotted in this report.

### Scripts files for processing and plotting in SVN at:

- /SeiSVN/seismic/HEPI/M1/HAMX/Scripts/Control\_Scripts/release/
- Step\_6\_Isolation\_Filters\_Z\_RX\_RY\_VP\_M1\_HEPI\_HAMX.m
- Step\_7\_Isolation\_Filters\_X\_Y\_RZ\_HP\_M1\_HEPI\_HAMX.m
- Step\_8>Loading\_Sensor\_Correction\_Filters\_M1\_HEPI\_HAMX.m

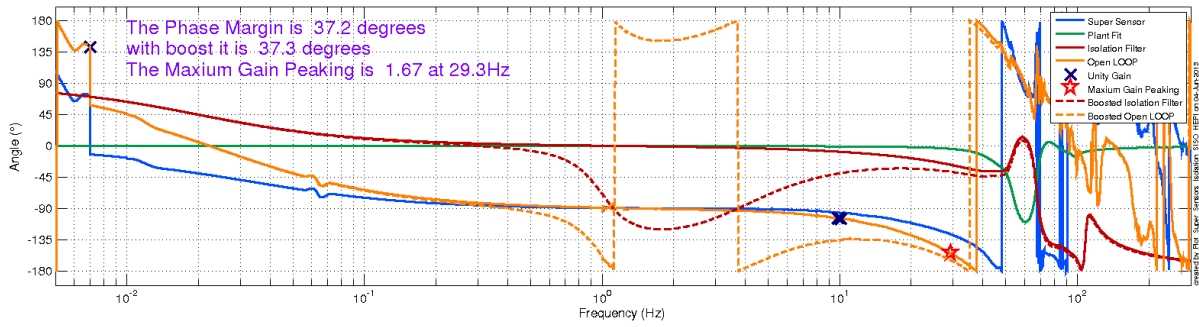
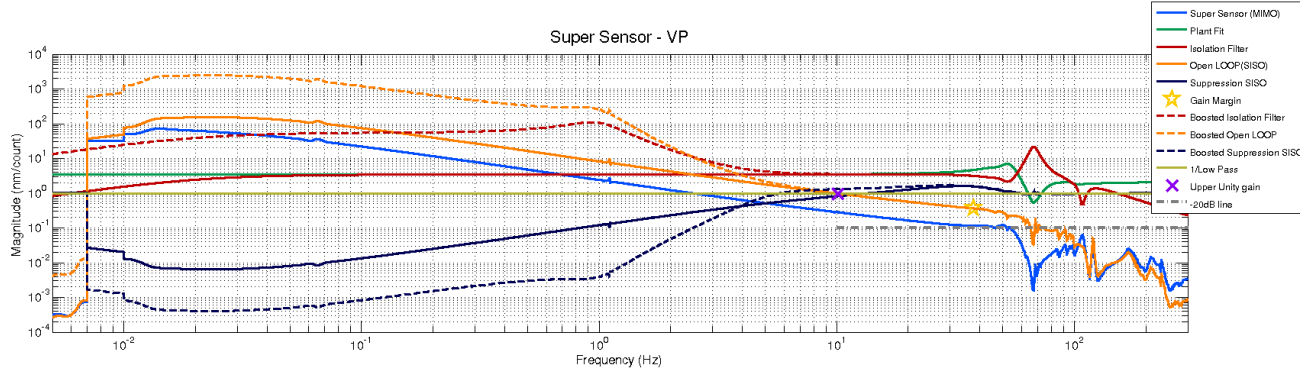
### Figures in SVN at:

- /SeiSVN/seismic/HEPI/M1/HAMX/Data/Figures/Transfer\_Functions/Simulations/Super\_Sensors/
- M1\_HPI\_HAMX\_Isolation\_Loops\_TF\_SISO\_ACT\_VP\_to\_SS\_VP\_03\_2013p.fig
- M1\_HPI\_HAMX\_Isolation\_Loops\_TF\_MIMO\_ACT\_VP\_to\_SS\_VP\_03\_2013p.fig

### Storage of measured transfer functions in the SVN at:

- /SeiSVN/seismic/HEPI/M1/HAMX/Data/Transfer\_functions/ Simulations/Super\_Sensors/

- M1\_HPI\_HAMX\_TF\_C2C\_Isolation\_V\_H\_Level\_1\_Blend\_testmHz\_03\_2013p.mat



### 1.3 Sensor Correction

Procedure:

- Commissioning Scripts
- Validation Scripts



Appendix A

Housing Centering Procedure