

SUS_TopMassOSEMs_11-30-23

November 30, 2023

```
[ ]: from gwpy.timeseries import TimeSeries
     from gwpy.plot import Plot
```

```
[ ]: ReferenceTime = 1384664470
```

```
#CheckTime = 1345560072 # At least SR2 was rubbing here.
```

```
CheckTime = 1384769400 # Middle of night, IFO should be DOWN
```

```
dt = 60
```

```
[ ]: optics = {'ITMX': {'stage': 'M0', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'ITMY': {'stage': 'M0', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'ETMX': {'stage': 'M0', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'ETMY': {'stage': 'M0', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'BS': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'PRM': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'PR2': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'PR3': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'SRM': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'SR2': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'SR3': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'MC1': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'MC2': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'MC3': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'TMSX': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'TMSY': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'IM1': {'stage': 'M1', 'dofs': ['L', 'P', 'Y']},
              'IM2': {'stage': 'M1', 'dofs': ['L', 'P', 'Y']},
              'IM3': {'stage': 'M1', 'dofs': ['L', 'P', 'Y']},
              'IM4': {'stage': 'M1', 'dofs': ['L', 'P', 'Y']},
              'RM1': {'stage': 'M1', 'dofs': ['L', 'P', 'Y']},
              'RM2': {'stage': 'M1', 'dofs': ['L', 'P', 'Y']},
              'OM1': {'stage': 'M1', 'dofs': ['L', 'P', 'Y']},
              'OM2': {'stage': 'M1', 'dofs': ['L', 'P', 'Y']},
              'OM3': {'stage': 'M1', 'dofs': ['L', 'P', 'Y']},
              'OMC': {'stage': 'M1', 'dofs': ['L', 'P', 'Y', 'R', 'T', 'V']},
              'OFI': {'stage': 'M1', 'dofs': ['L', 'T', 'Y']},
              }
```

```

for optic in optics.keys():
    chanlist = []
    for dof in optics[optic]['dofs']:
        chanlist.append('H1:SUS-%s_%s_DAMP_%s_IN1_DQ'%(optic,
↳optics[optic]['stage'], dof))

    optics[optic]['chanlist'] = chanlist

```

```

[ ]: myplot = {}

for optic in optics.keys():
    myplot[optic] = Plot(figsize=(50,8))
    ii = 0
    for dof in optics[optic]['dofs']:
        ii += 1
        myplot[optic].add_subplot(1, len(optics[optic]['dofs']), ii)

        print('Fetching data for %s'%optics[optic]['chanlist'][ii-1])
        refData = TimeSeries.fetch(optics[optic]['chanlist'][ii-1],
↳ReferenceTime, ReferenceTime+dt).asd(8,4)
        checkData = TimeSeries.fetch(optics[optic]['chanlist'][ii-1],
↳CheckTime, CheckTime+dt).asd(8,4)

        ax = myplot[optic].gca()
        ax.plot(refData, label='Reference time %s'%ReferenceTime)
        ax.plot(checkData, label='Check time %s'%CheckTime)
        ax.set_xscale('log')
        ax.set_yscale('log')
        ax.set_xlabel('Frequency [Hz]')
        ax.set_ylabel('Optic Motion [um/rtHz or urad/rtHz]')
        ax.set_title(optics[optic]['chanlist'][ii-1])
        ax.legend()

```

```

Fetching data for H1:SUS-ITMX_MO_DAMP_L_IN1_DQ
Fetching data for H1:SUS-ITMX_MO_DAMP_P_IN1_DQ
Fetching data for H1:SUS-ITMX_MO_DAMP_Y_IN1_DQ
Fetching data for H1:SUS-ITMX_MO_DAMP_R_IN1_DQ
Fetching data for H1:SUS-ITMX_MO_DAMP_T_IN1_DQ
Fetching data for H1:SUS-ITMX_MO_DAMP_V_IN1_DQ
Fetching data for H1:SUS-ITMY_MO_DAMP_L_IN1_DQ
Fetching data for H1:SUS-ITMY_MO_DAMP_P_IN1_DQ
Fetching data for H1:SUS-ITMY_MO_DAMP_Y_IN1_DQ
Fetching data for H1:SUS-ITMY_MO_DAMP_R_IN1_DQ
Fetching data for H1:SUS-ITMY_MO_DAMP_T_IN1_DQ
Fetching data for H1:SUS-ITMY_MO_DAMP_V_IN1_DQ

```

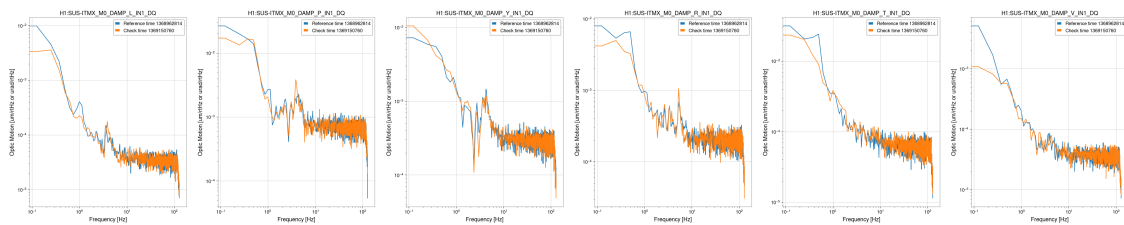
Fetching data for H1:SUS-ETMX_MO_DAMP_L_IN1_DQ
Fetching data for H1:SUS-ETMX_MO_DAMP_P_IN1_DQ
Fetching data for H1:SUS-ETMX_MO_DAMP_Y_IN1_DQ
Fetching data for H1:SUS-ETMX_MO_DAMP_R_IN1_DQ
Fetching data for H1:SUS-ETMX_MO_DAMP_T_IN1_DQ
Fetching data for H1:SUS-ETMX_MO_DAMP_V_IN1_DQ
Fetching data for H1:SUS-ETMY_MO_DAMP_L_IN1_DQ
Fetching data for H1:SUS-ETMY_MO_DAMP_P_IN1_DQ
Fetching data for H1:SUS-ETMY_MO_DAMP_Y_IN1_DQ
Fetching data for H1:SUS-ETMY_MO_DAMP_R_IN1_DQ
Fetching data for H1:SUS-ETMY_MO_DAMP_T_IN1_DQ
Fetching data for H1:SUS-ETMY_MO_DAMP_V_IN1_DQ
Fetching data for H1:SUS-BS_M1_DAMP_L_IN1_DQ
Fetching data for H1:SUS-BS_M1_DAMP_P_IN1_DQ
Fetching data for H1:SUS-BS_M1_DAMP_Y_IN1_DQ
Fetching data for H1:SUS-BS_M1_DAMP_R_IN1_DQ
Fetching data for H1:SUS-BS_M1_DAMP_T_IN1_DQ
Fetching data for H1:SUS-BS_M1_DAMP_V_IN1_DQ
Fetching data for H1:SUS-PRM_M1_DAMP_L_IN1_DQ
Fetching data for H1:SUS-PRM_M1_DAMP_P_IN1_DQ
Fetching data for H1:SUS-PRM_M1_DAMP_Y_IN1_DQ
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Fetching data for H1:SUS-PR2_M1_DAMP_T_IN1_DQ
Fetching data for H1:SUS-PR2_M1_DAMP_V_IN1_DQ
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Fetching data for H1:SUS-PR3_M1_DAMP_P_IN1_DQ
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Fetching data for H1:SUS-SR2_M1_DAMP_V_IN1_DQ

Fetching data for H1:SUS-SR3_M1_DAMP_L_IN1_DQ
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Fetching data for H1:SUS-MC2_M1_DAMP_Y_IN1_DQ
Fetching data for H1:SUS-MC2_M1_DAMP_R_IN1_DQ
Fetching data for H1:SUS-MC2_M1_DAMP_T_IN1_DQ
Fetching data for H1:SUS-MC2_M1_DAMP_V_IN1_DQ
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Fetching data for H1:SUS-MC3_M1_DAMP_R_IN1_DQ
Fetching data for H1:SUS-MC3_M1_DAMP_T_IN1_DQ
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Fetching data for H1:SUS-TMSX_M1_DAMP_L_IN1_DQ
Fetching data for H1:SUS-TMSX_M1_DAMP_P_IN1_DQ
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Fetching data for H1:SUS-TMSX_M1_DAMP_R_IN1_DQ
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Fetching data for H1:SUS-TMSX_M1_DAMP_V_IN1_DQ
Fetching data for H1:SUS-TMSY_M1_DAMP_L_IN1_DQ
Fetching data for H1:SUS-TMSY_M1_DAMP_P_IN1_DQ
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Fetching data for H1:SUS-IM2_M1_DAMP_P_IN1_DQ
Fetching data for H1:SUS-IM2_M1_DAMP_Y_IN1_DQ
Fetching data for H1:SUS-IM3_M1_DAMP_L_IN1_DQ
Fetching data for H1:SUS-IM3_M1_DAMP_P_IN1_DQ
Fetching data for H1:SUS-IM3_M1_DAMP_Y_IN1_DQ
Fetching data for H1:SUS-IM4_M1_DAMP_L_IN1_DQ
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Fetching data for H1:SUS-IM4_M1_DAMP_Y_IN1_DQ

Fetching data for H1:SUS-RM1_M1_DAMP_L_IN1_DQ
 Fetching data for H1:SUS-RM1_M1_DAMP_P_IN1_DQ
 Fetching data for H1:SUS-RM1_M1_DAMP_Y_IN1_DQ
 Fetching data for H1:SUS-RM2_M1_DAMP_L_IN1_DQ
 Fetching data for H1:SUS-RM2_M1_DAMP_P_IN1_DQ
 Fetching data for H1:SUS-RM2_M1_DAMP_Y_IN1_DQ
 Fetching data for H1:SUS-OM1_M1_DAMP_L_IN1_DQ
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 Fetching data for H1:SUS-OM1_M1_DAMP_Y_IN1_DQ
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 Fetching data for H1:SUS-OM3_M1_DAMP_L_IN1_DQ
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 Fetching data for H1:SUS-OM3_M1_DAMP_Y_IN1_DQ
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 Fetching data for H1:SUS-OMC_M1_DAMP_P_IN1_DQ
 Fetching data for H1:SUS-OMC_M1_DAMP_Y_IN1_DQ
 Fetching data for H1:SUS-OMC_M1_DAMP_R_IN1_DQ
 Fetching data for H1:SUS-OMC_M1_DAMP_T_IN1_DQ
 Fetching data for H1:SUS-OMC_M1_DAMP_V_IN1_DQ
 Fetching data for H1:SUS-OFI_M1_DAMP_L_IN1_DQ
 Fetching data for H1:SUS-OFI_M1_DAMP_T_IN1_DQ
 Fetching data for H1:SUS-OFI_M1_DAMP_Y_IN1_DQ

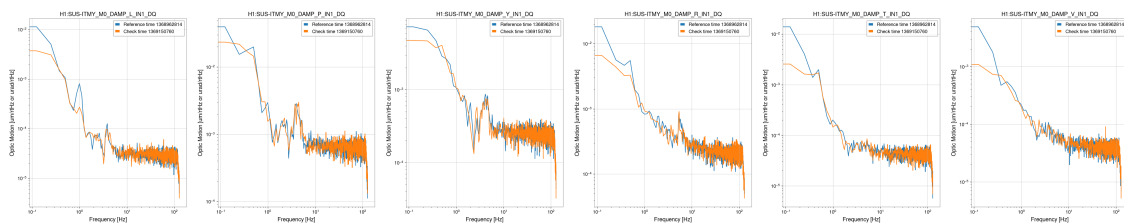
```
[ ]: myplot['ITMX']
```

```
[ ]:
```



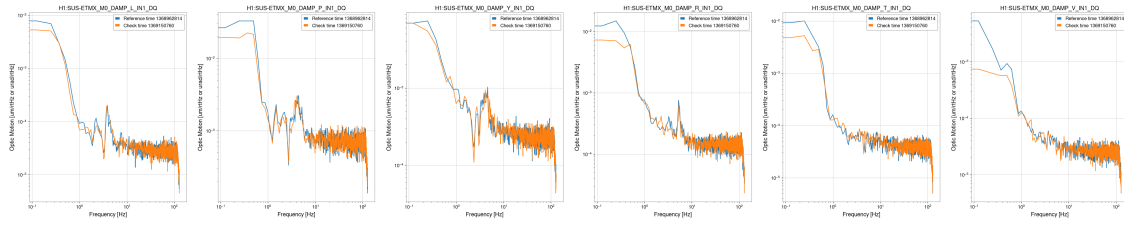
```
[ ]: myplot['ITMY']
```

```
[ ]:
```



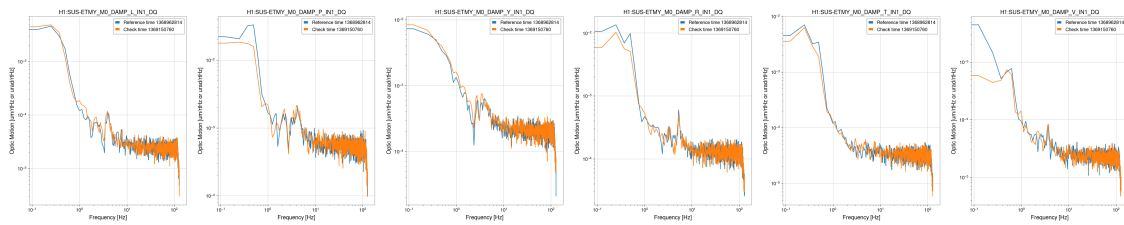
```
[ ]: myplot['ETMX']
```

```
[ ]:
```



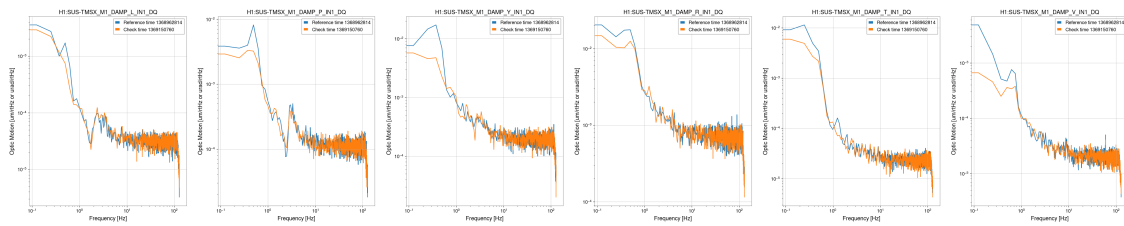
```
[ ]: myplot['ETMY']
```

```
[ ]:
```



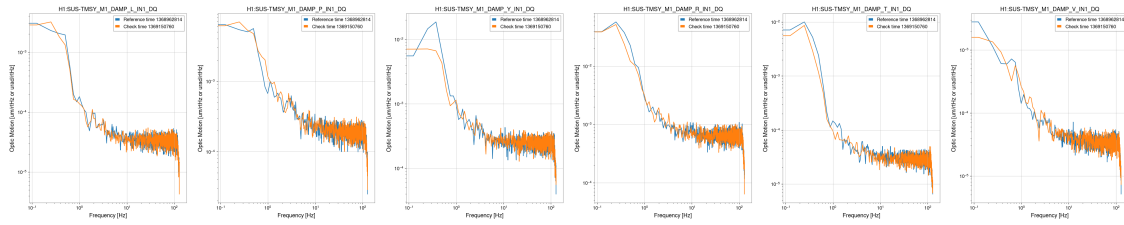
```
[ ]: myplot['TMSX']
```

```
[ ]:
```



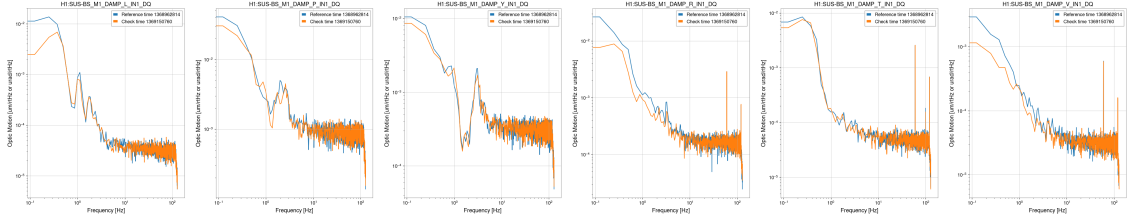
```
[ ]: myplot['TMSY']
```

```
[ ]:
```



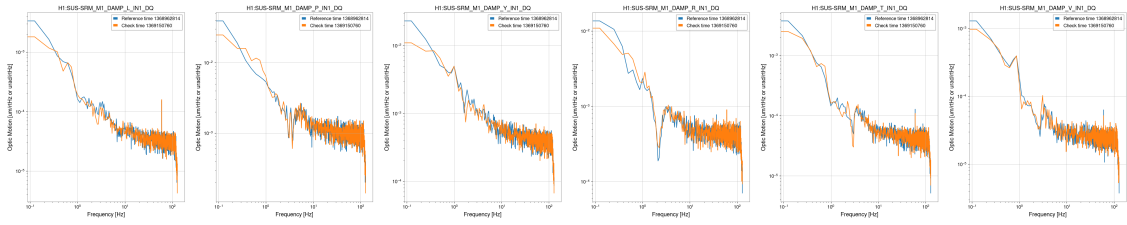
```
[ ]: myplot['BS']
```

```
[ ]:
```



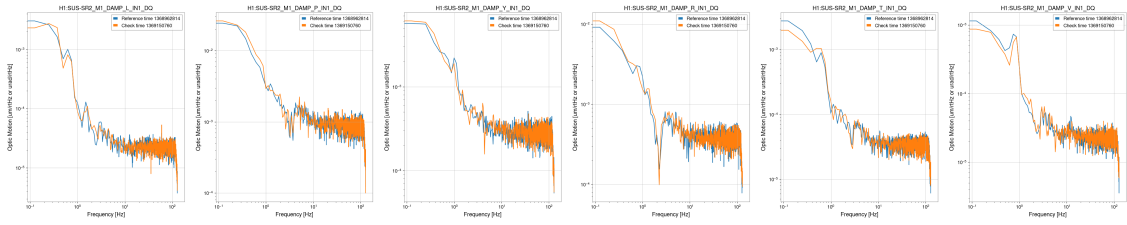
```
[ ]: myplot['SRM']
```

```
[ ]:
```



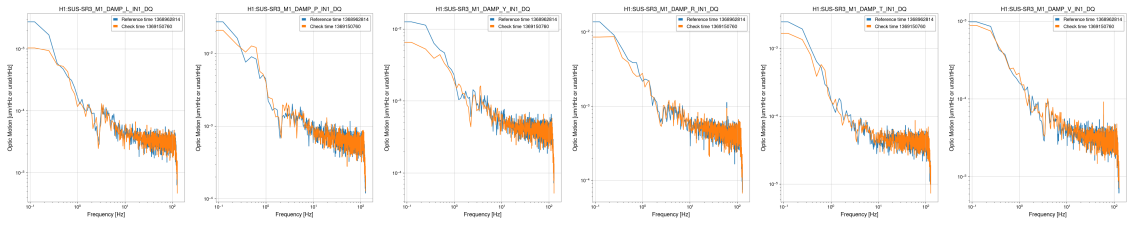
```
[ ]: myplot['SR2']
```

```
[ ]:
```



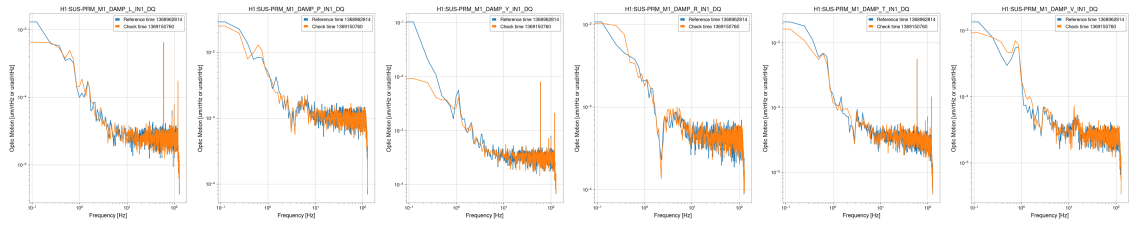
```
[ ]: myplot['SR3']
```

```
[ ]:
```



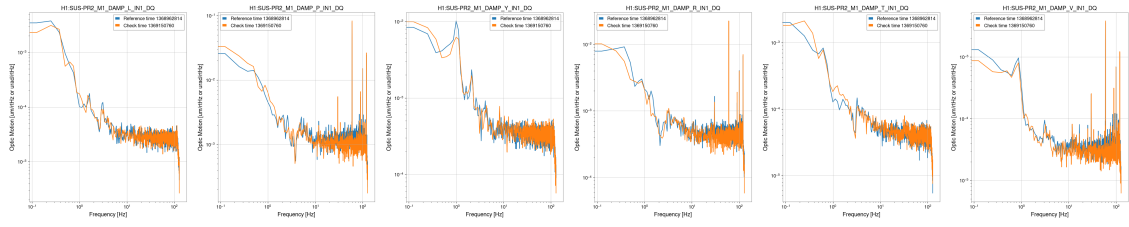
```
[ ]: myplot['PRM']
```

```
[ ]:
```



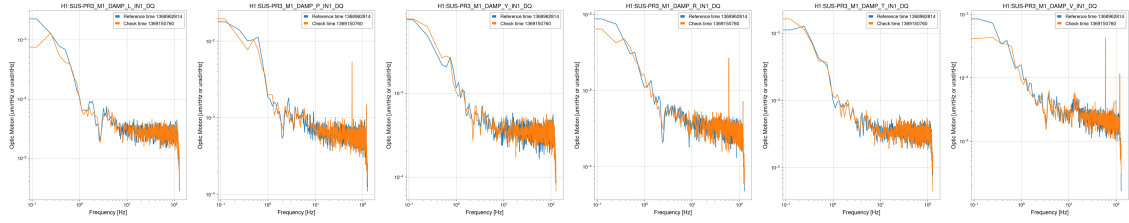
```
[ ]: myplot['PR2']
```

```
[ ]:
```



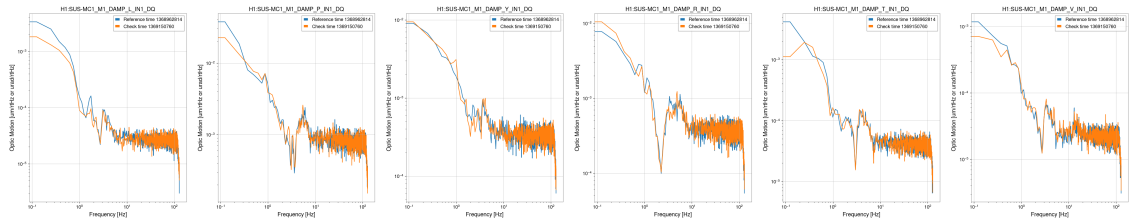
```
[ ]: myplot['PR3']
```

```
[ ]:
```



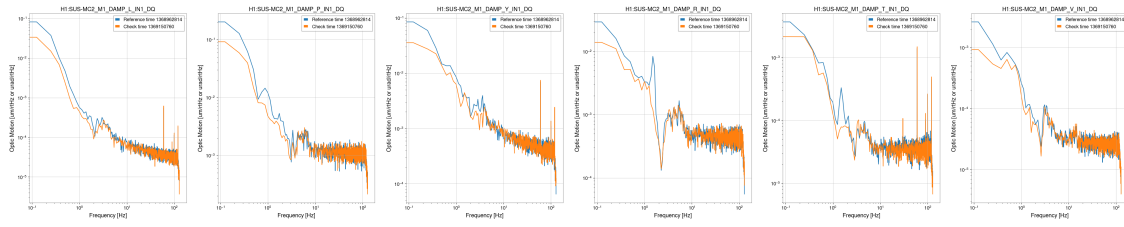
```
[ ]: myplot['MC1']
```

```
[ ]:
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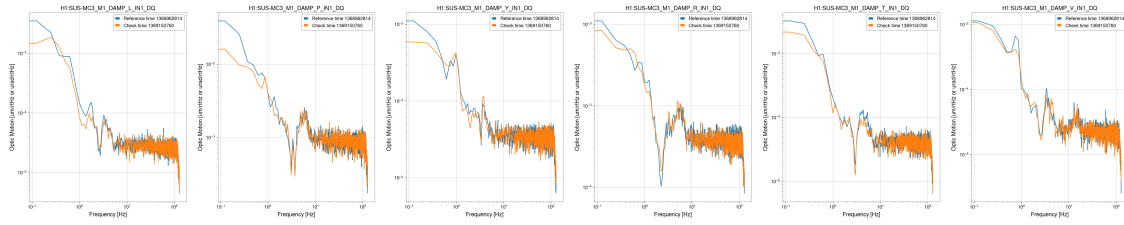
```
[ ]: myplot['MC2']
```

```
[ ]:
```

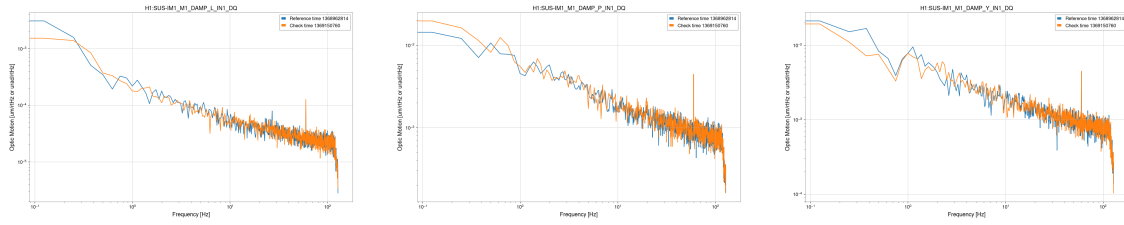
```
[ ]: myplot['MC3']
```

```
[ ]:
```



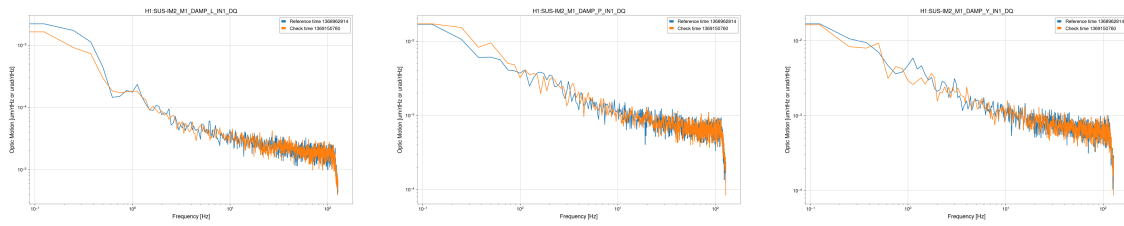
```
[ ]: myplot['IM1']
```

```
[ ]:
```



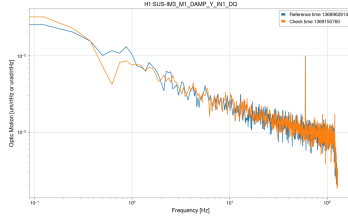
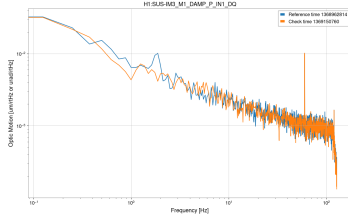
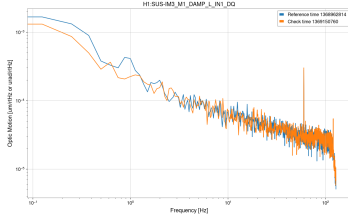
```
[ ]: myplot['IM2']
```

```
[ ]:
```



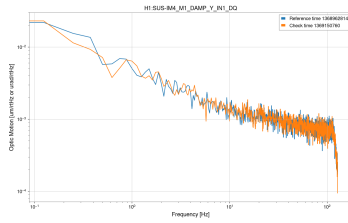
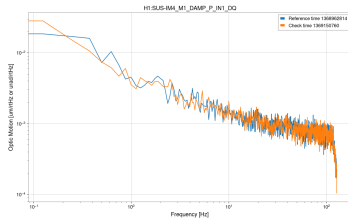
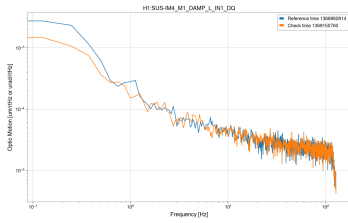
```
[ ]: myplot['IM3']
```

```
[ ]:
```



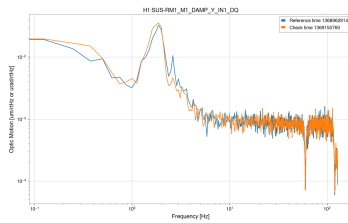
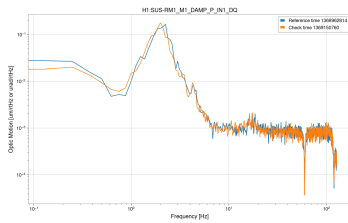
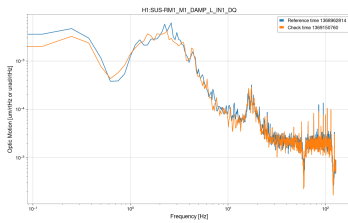
```
[ ]: myplot['IM4']
```

```
[ ]:
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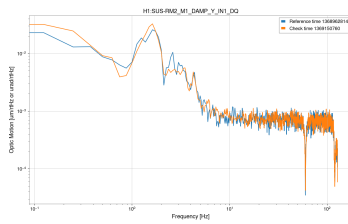
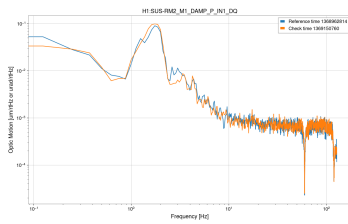
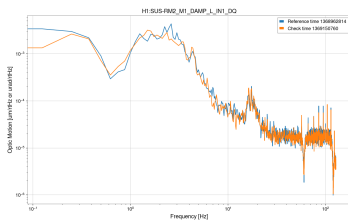
```
[ ]: myplot['RM1']
```

```
[ ]:
```



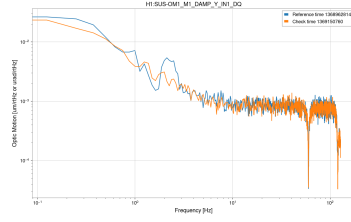
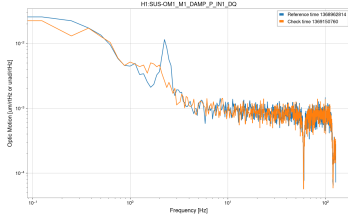
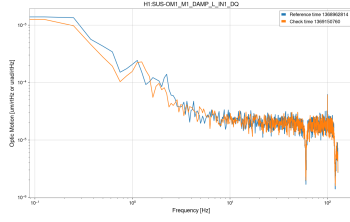
```
[ ]: myplot['RM2']
```

```
[ ]:
```



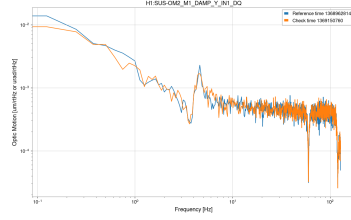
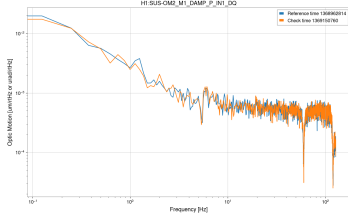
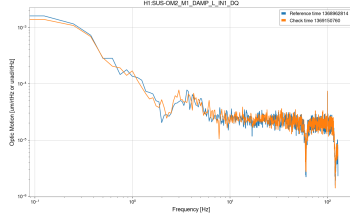
```
[ ]: myplot['OM1']
```

```
[ ]:
```



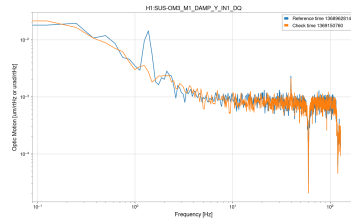
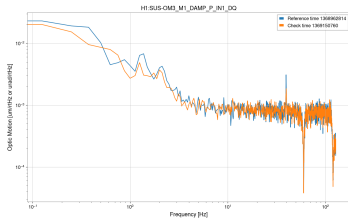
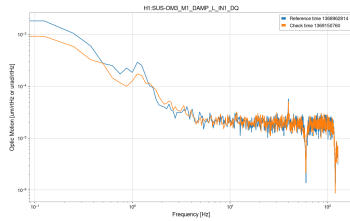
```
[ ]: myplot['OM2']
```

```
[ ]:
```



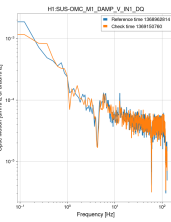
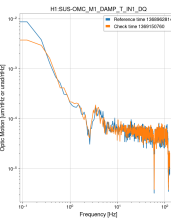
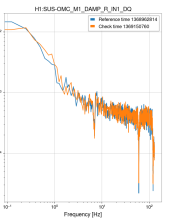
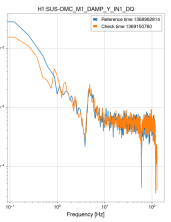
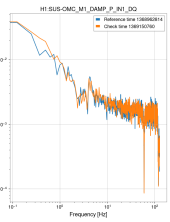
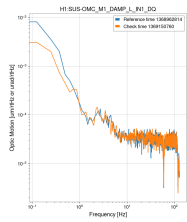
```
[ ]: myplot['OM3']
```

```
[ ]:
```



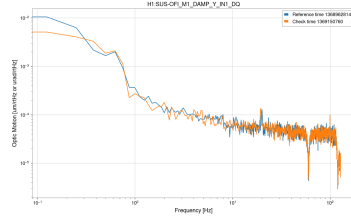
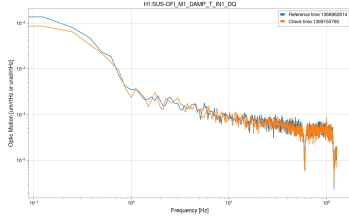
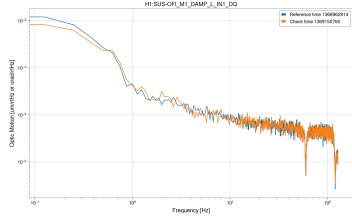
```
[ ]: myplot['OMC']
```

```
[ ]:
```



```
[ ]: myplot['OFI']
```

```
[ ]:
```



[]:

