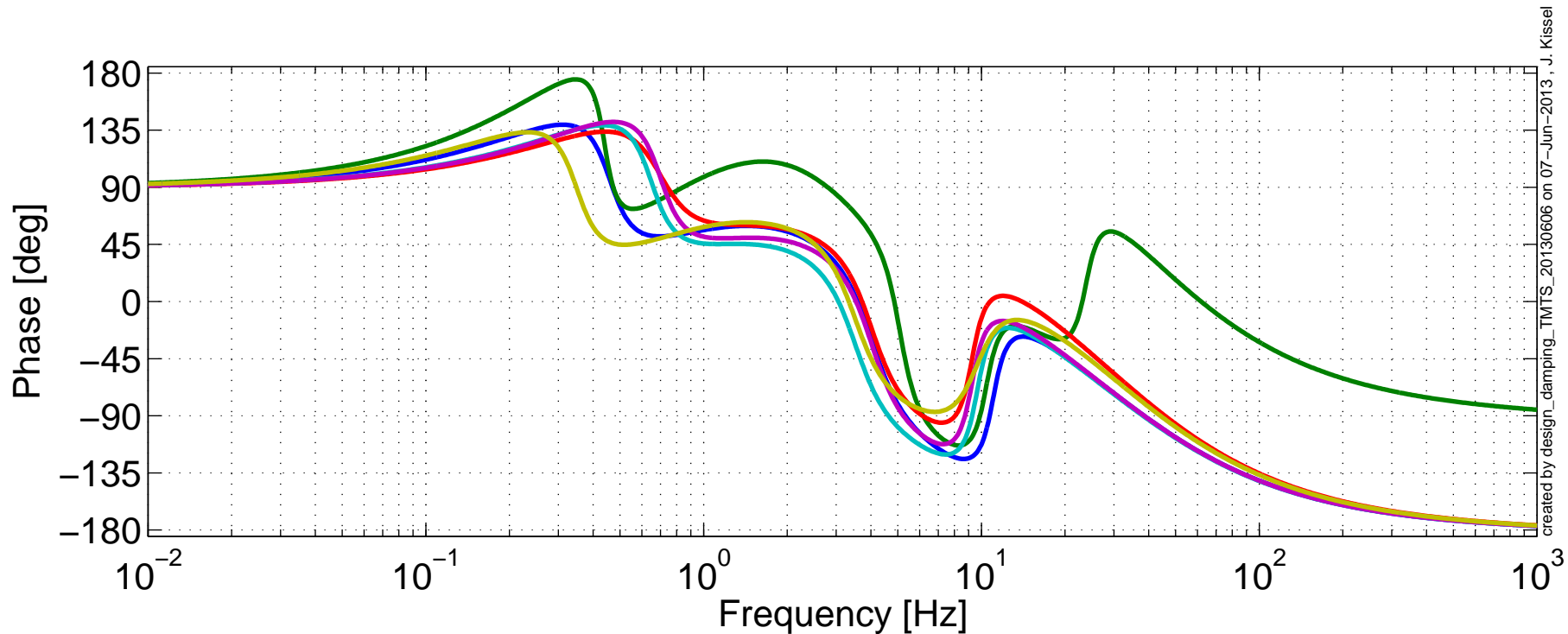
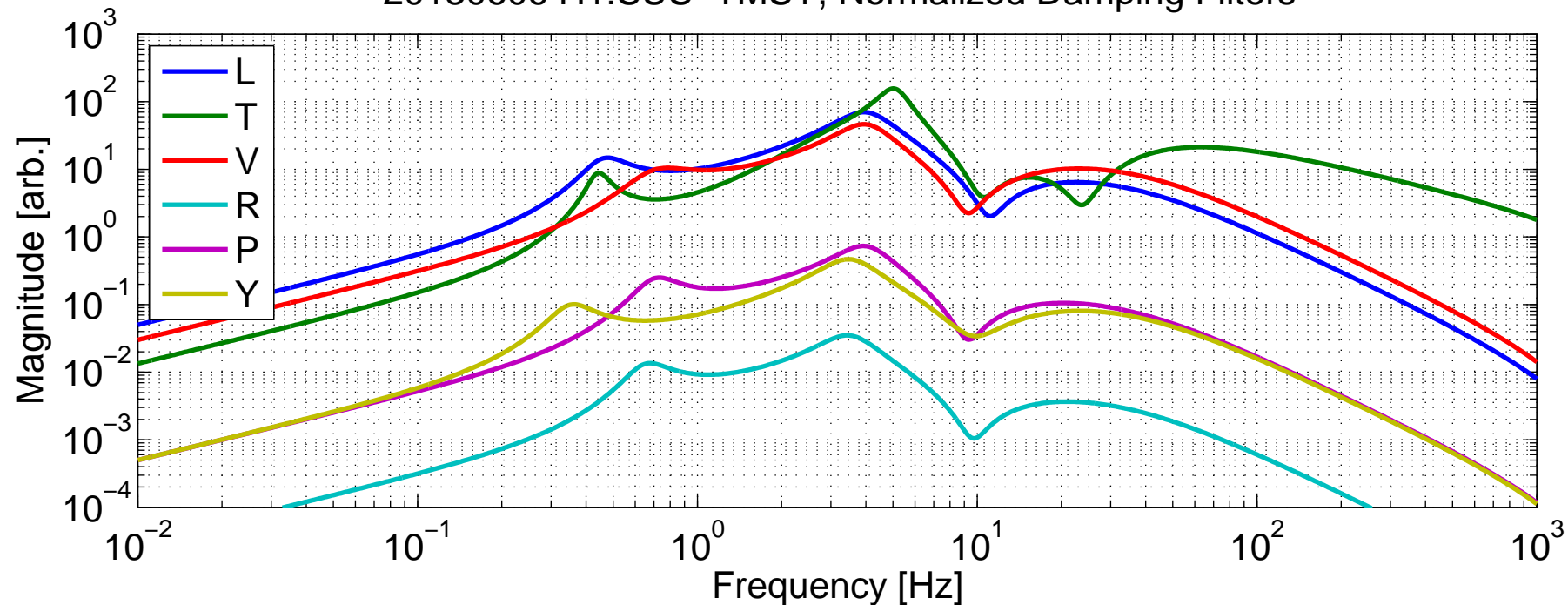
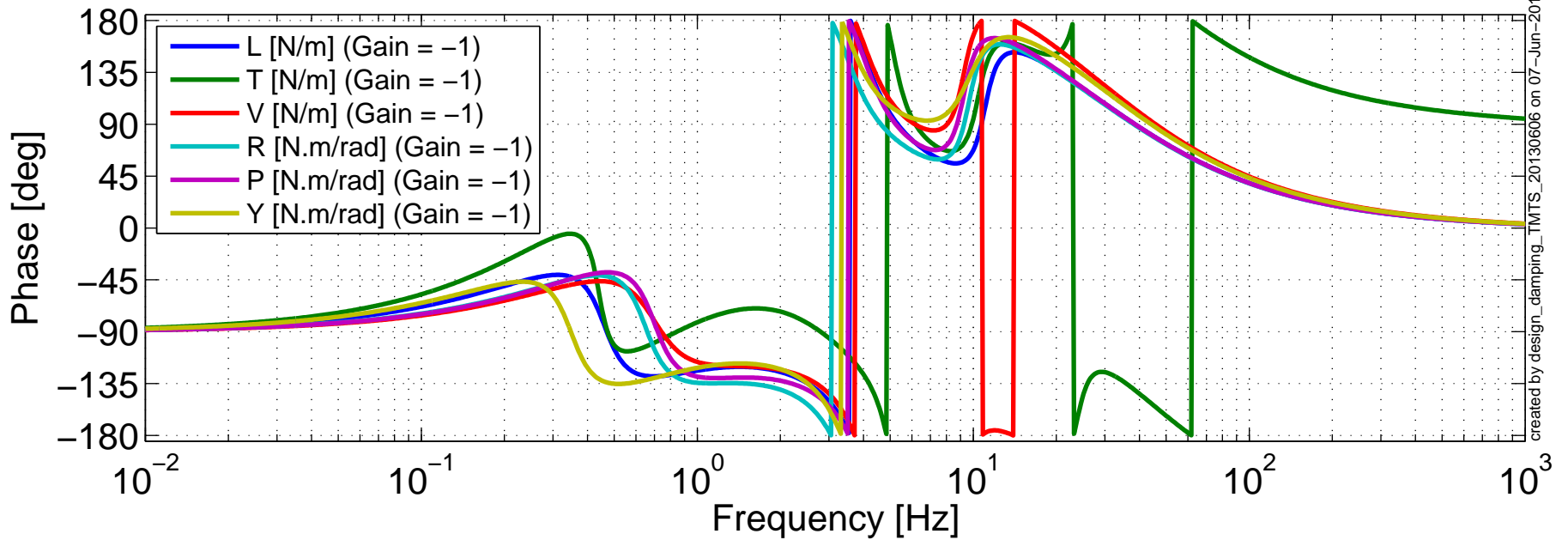
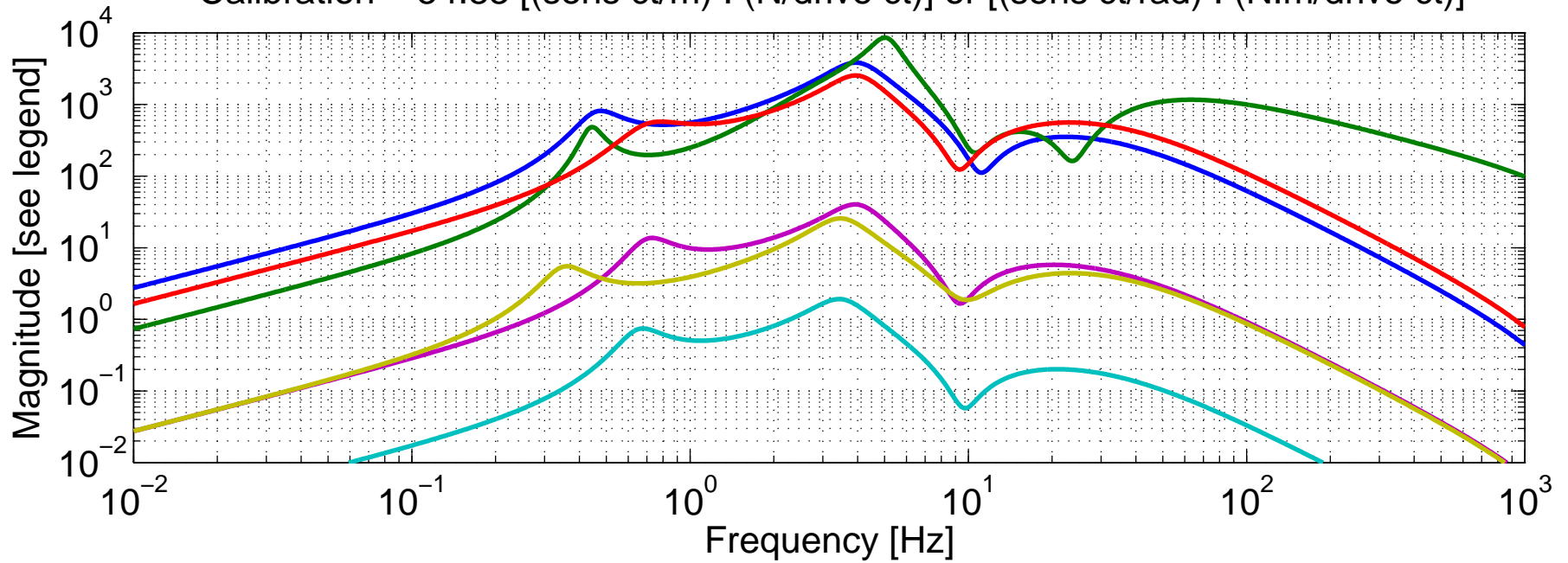


20130606 H1:SUS-TMSY, Normalized Damping Filters

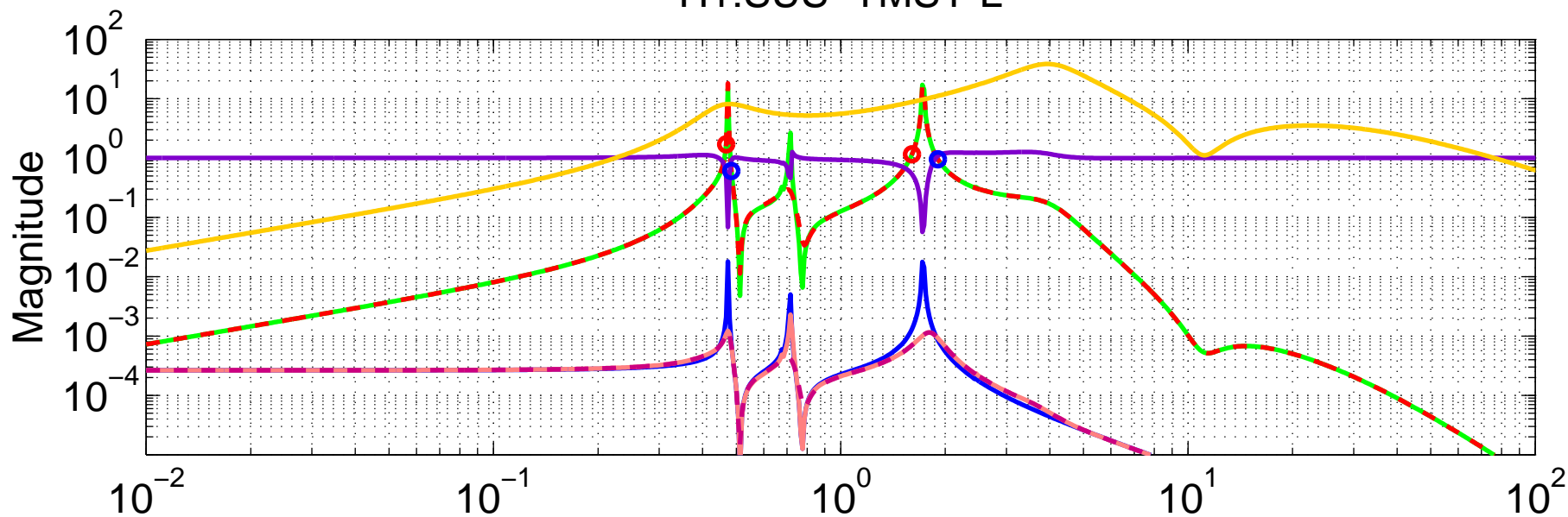


created by design\_damping\_TMTS\_20130606 on 07-Jun-2013, J. Kissel

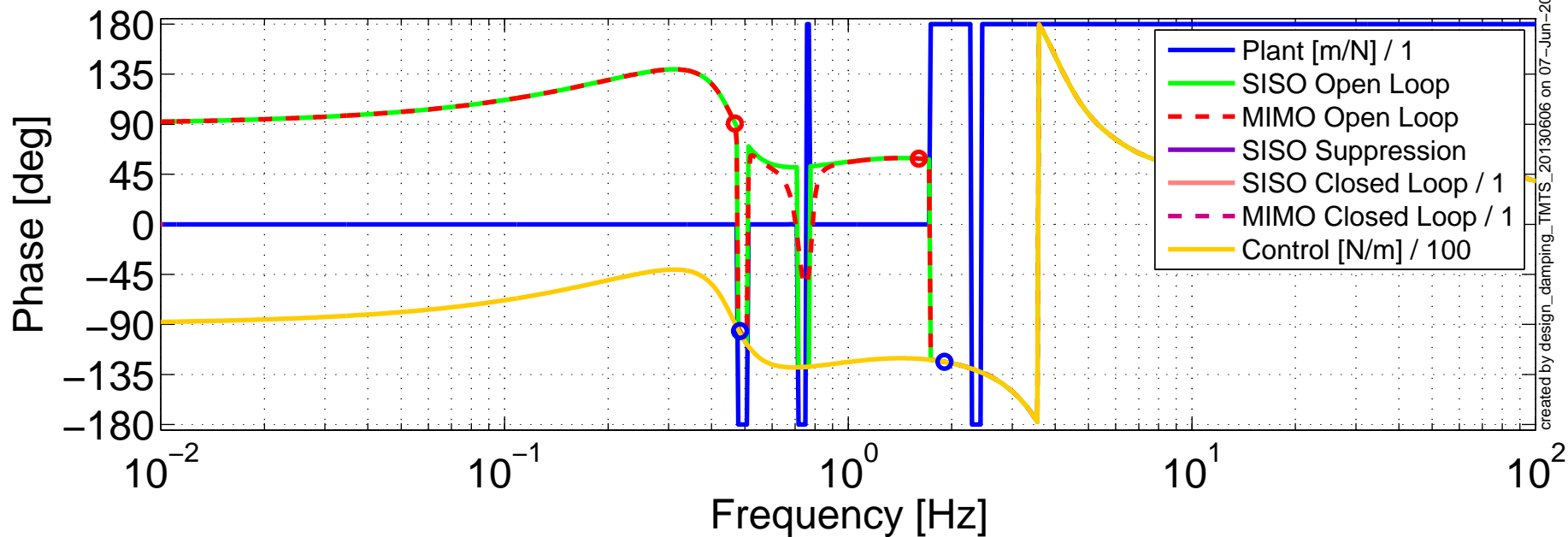
20130606 H1:SUS-TMSY, Calibrated Damping Filters  
 Calibration = 54.83 [(sens ct/m) . (N/drive ct)] or [(sens ct/rad) . (N.m/drive ct)]



# Damping Loop Design H1:SUS-TMSY L

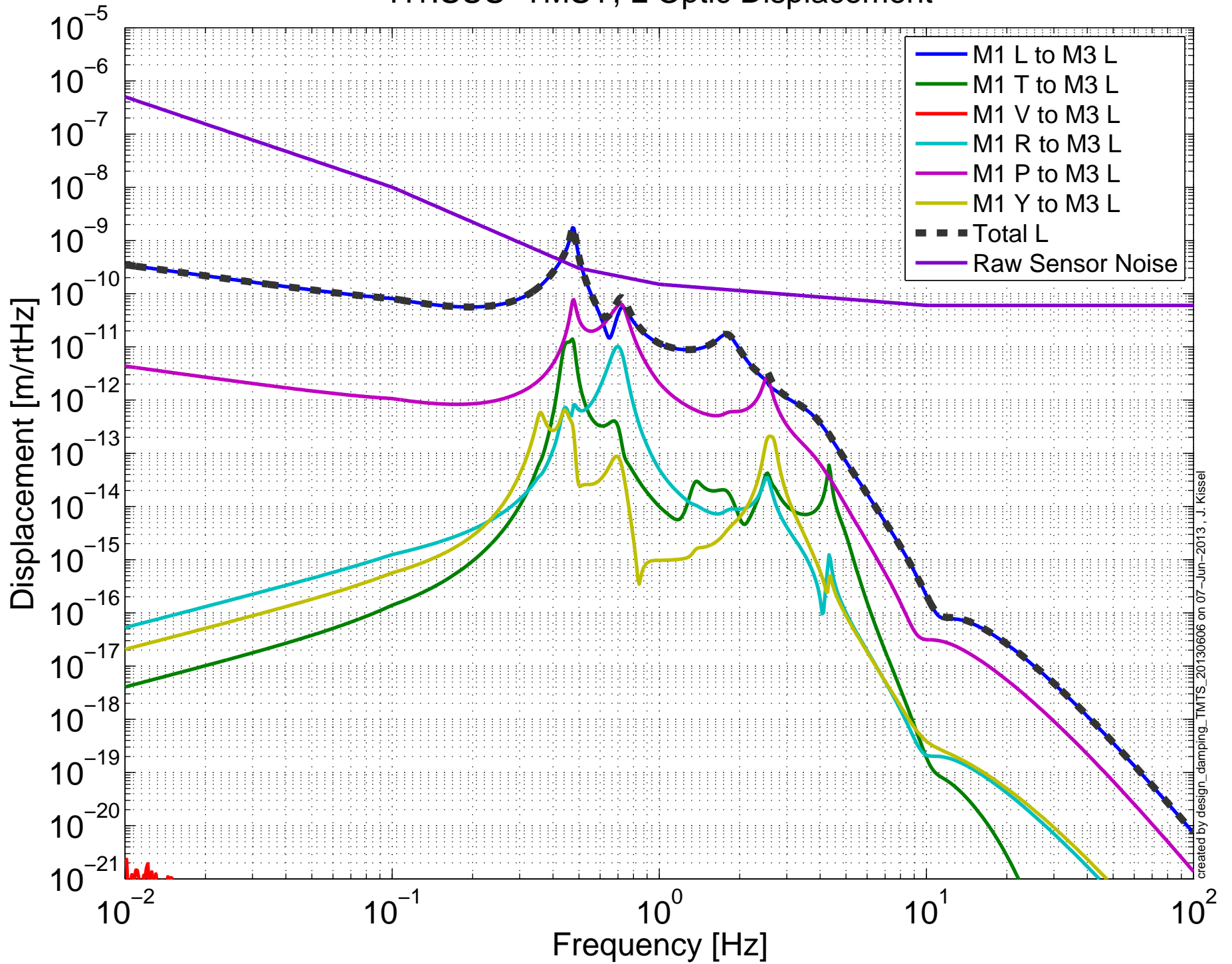


MIMO LUGF Phase Margins (red): [89.4 121] [deg]  
MIMO UUGF Phase Margins (blue): [84 56.4] [deg]

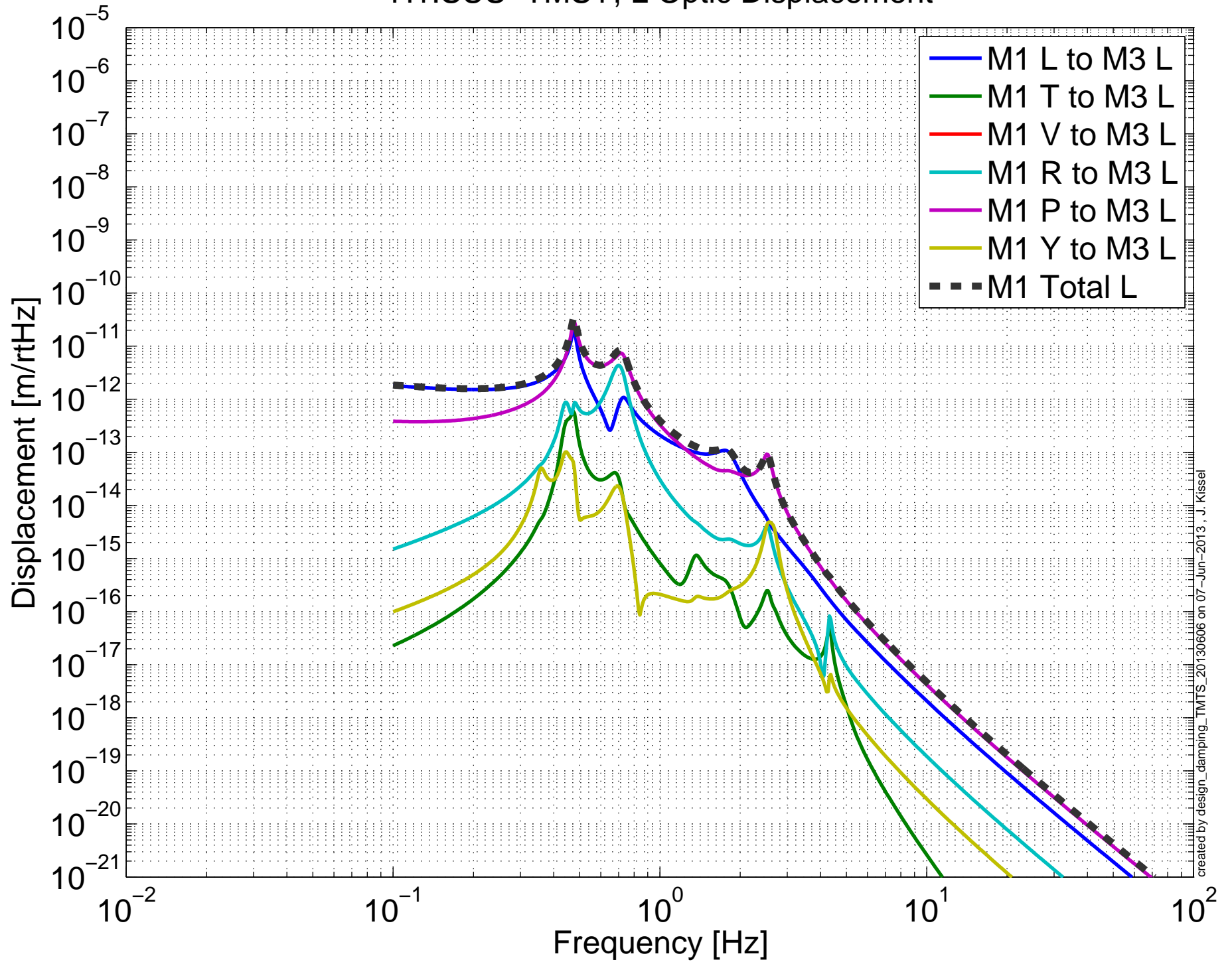




# Projected Top Mass Sensor > Optic Noise Budget H1:SUS-TMSY, L Optic Displacement

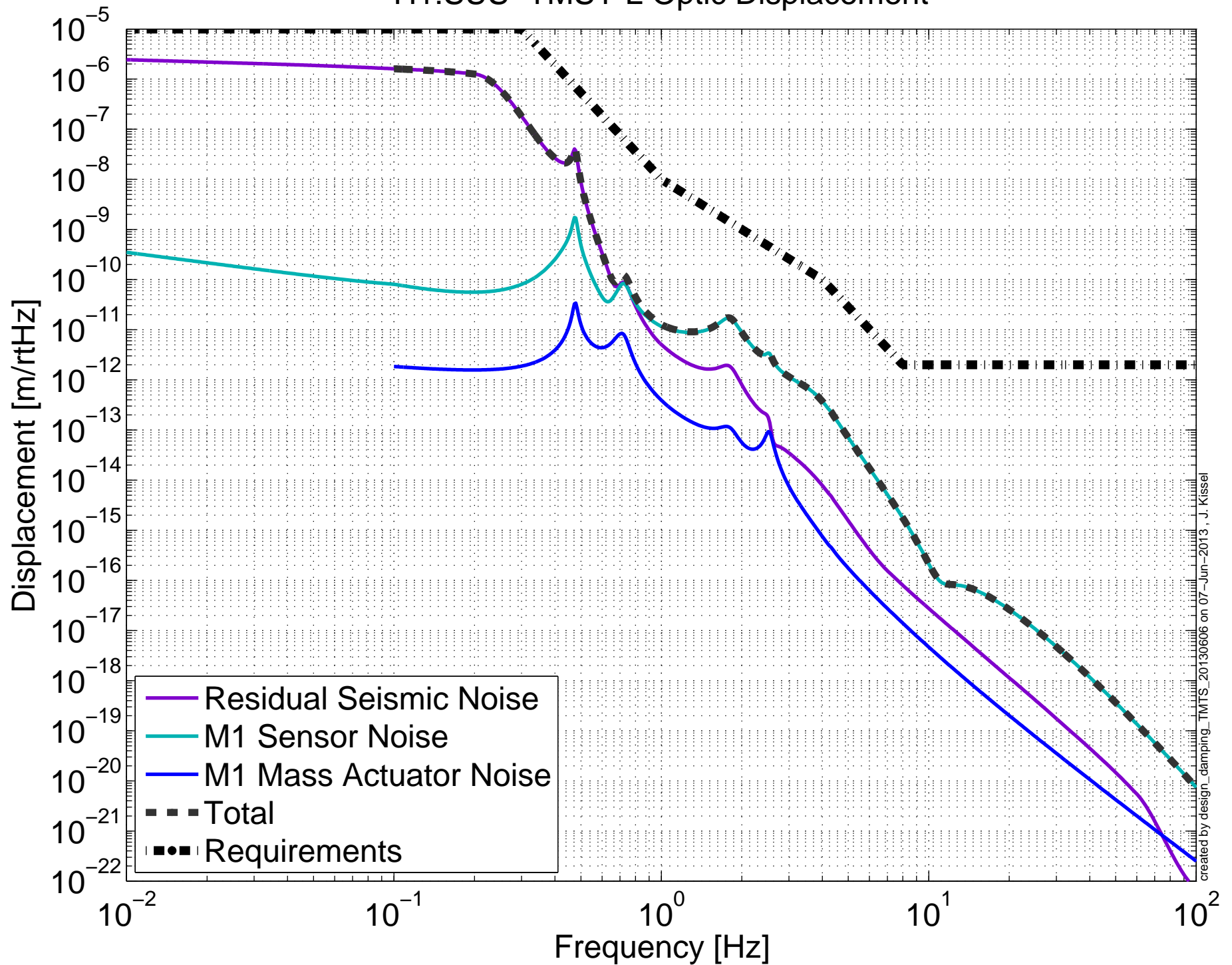


# Projected M1 Mass Actuator > Optic Noise Budget H1:SUS-TMSY, L Optic Displacement



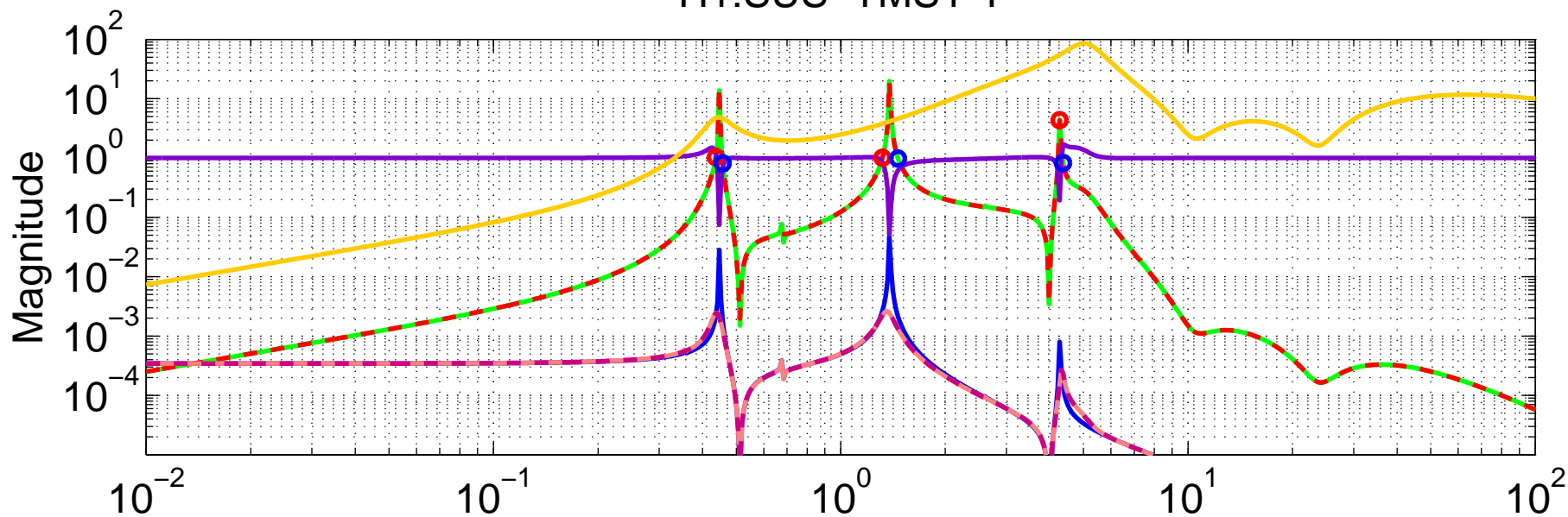
created by design\_damping\_TMTS\_20130606 on 07-Jun-2013 - J. Kissel

# Damping Loop Performance H1:SUS-TMSY L Optic Displacement

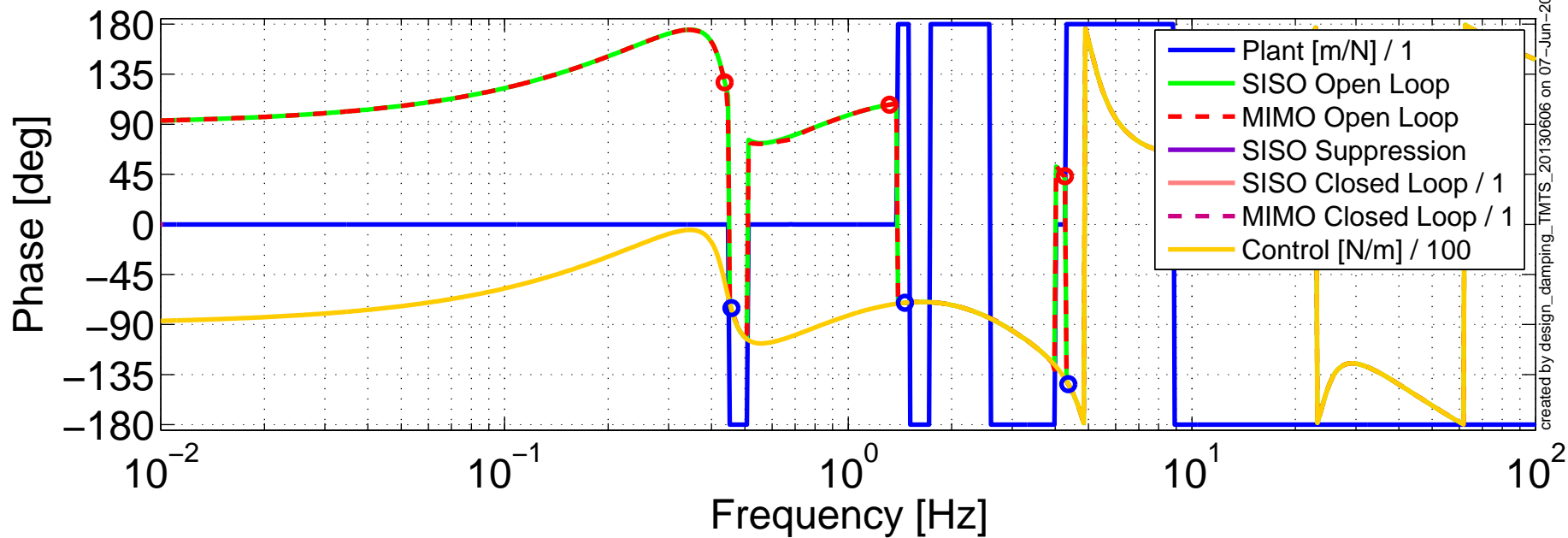


# Damping Loop Design

## H1:SUS-TMSY T



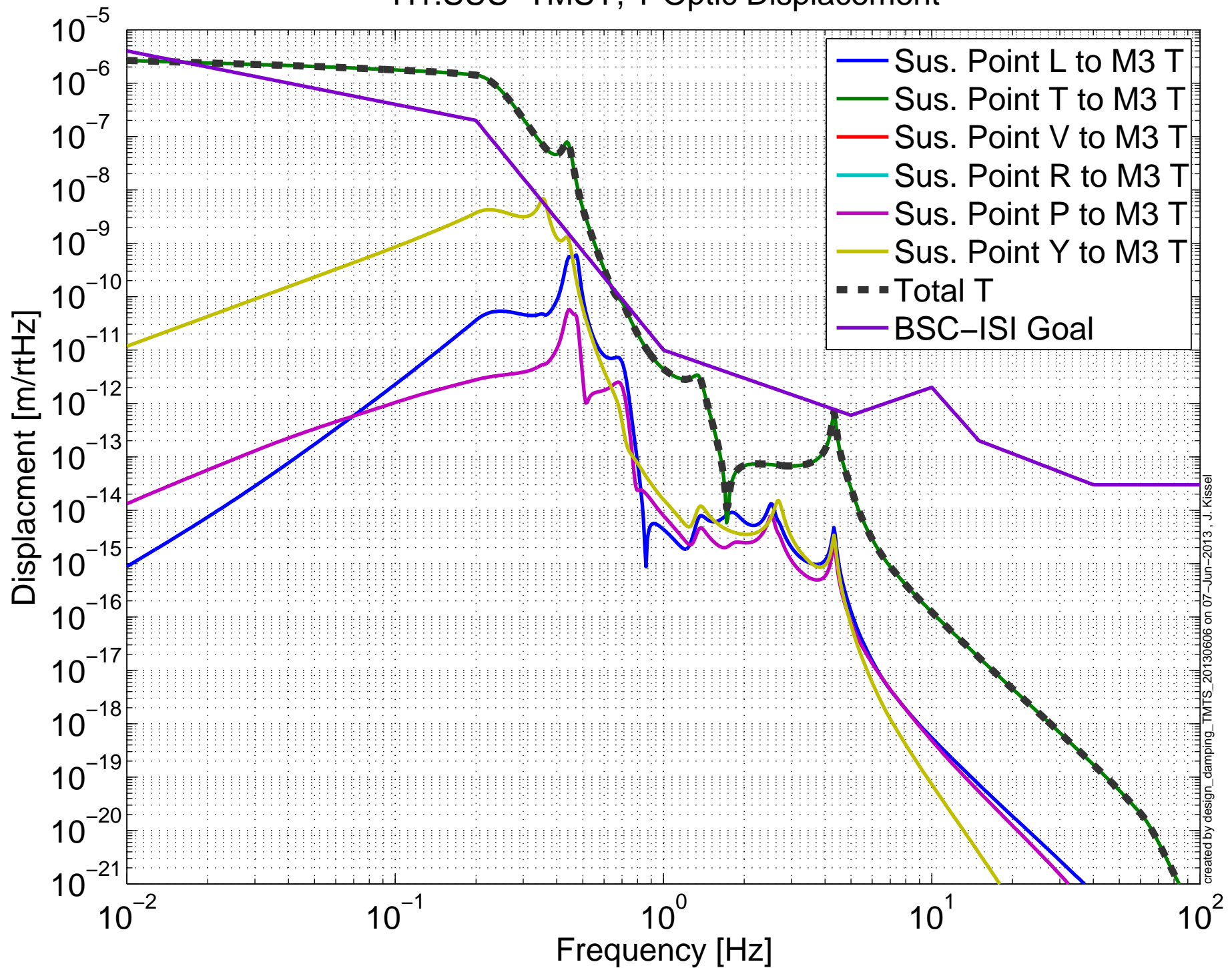
MIMO LUGF Phase Margins (red): [52.3    72.4    137] [deg]  
MIMO UUGF Phase Margins (blue): [105    110    36.4] [deg]



created by design\_damping\_TMFS\_20130606 on 07-Jun-2013, J. Kissel

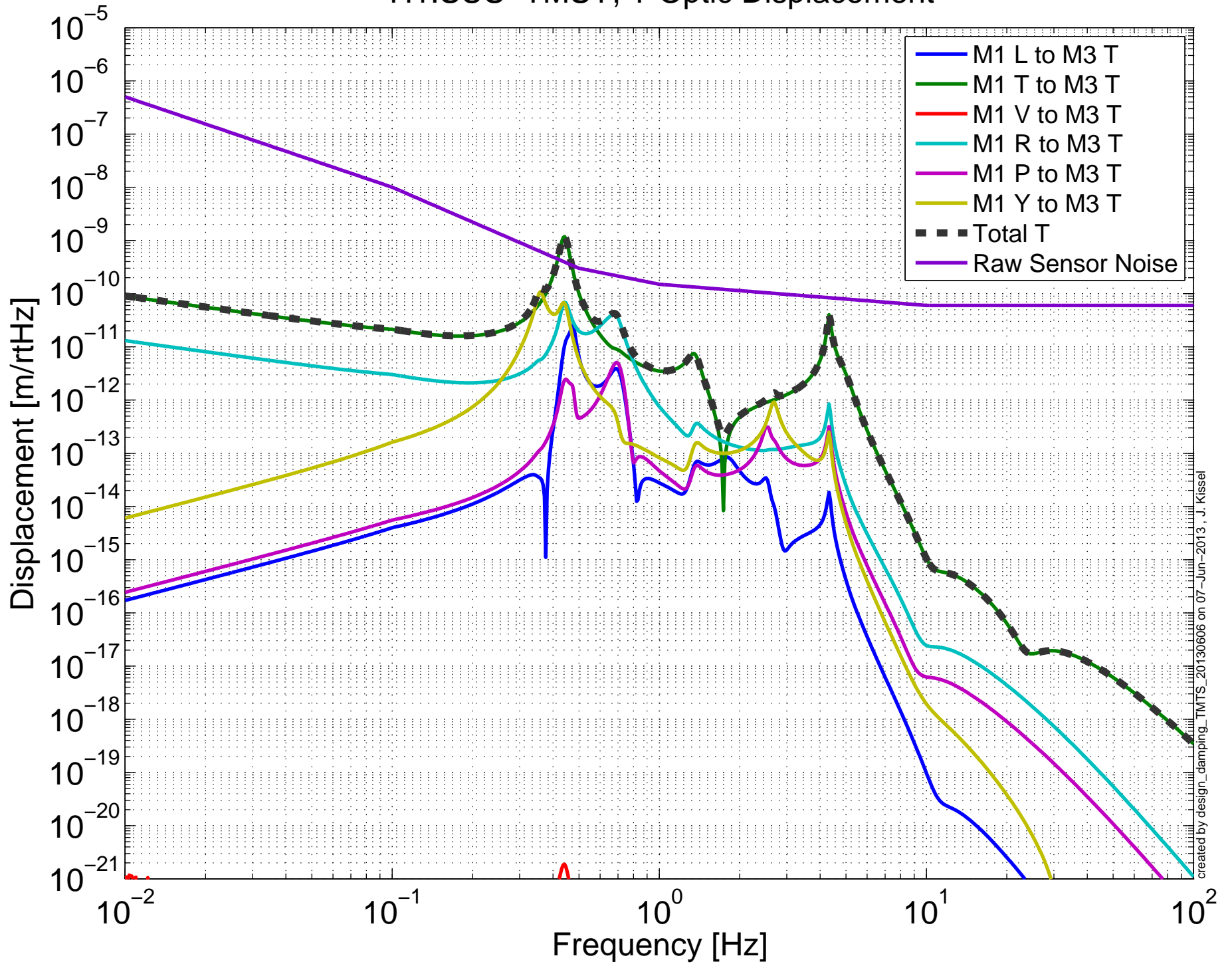


# Projected Sus. Point > Optic Seismic Noise Budget H1:SUS-TMSY, T Optic Displacement

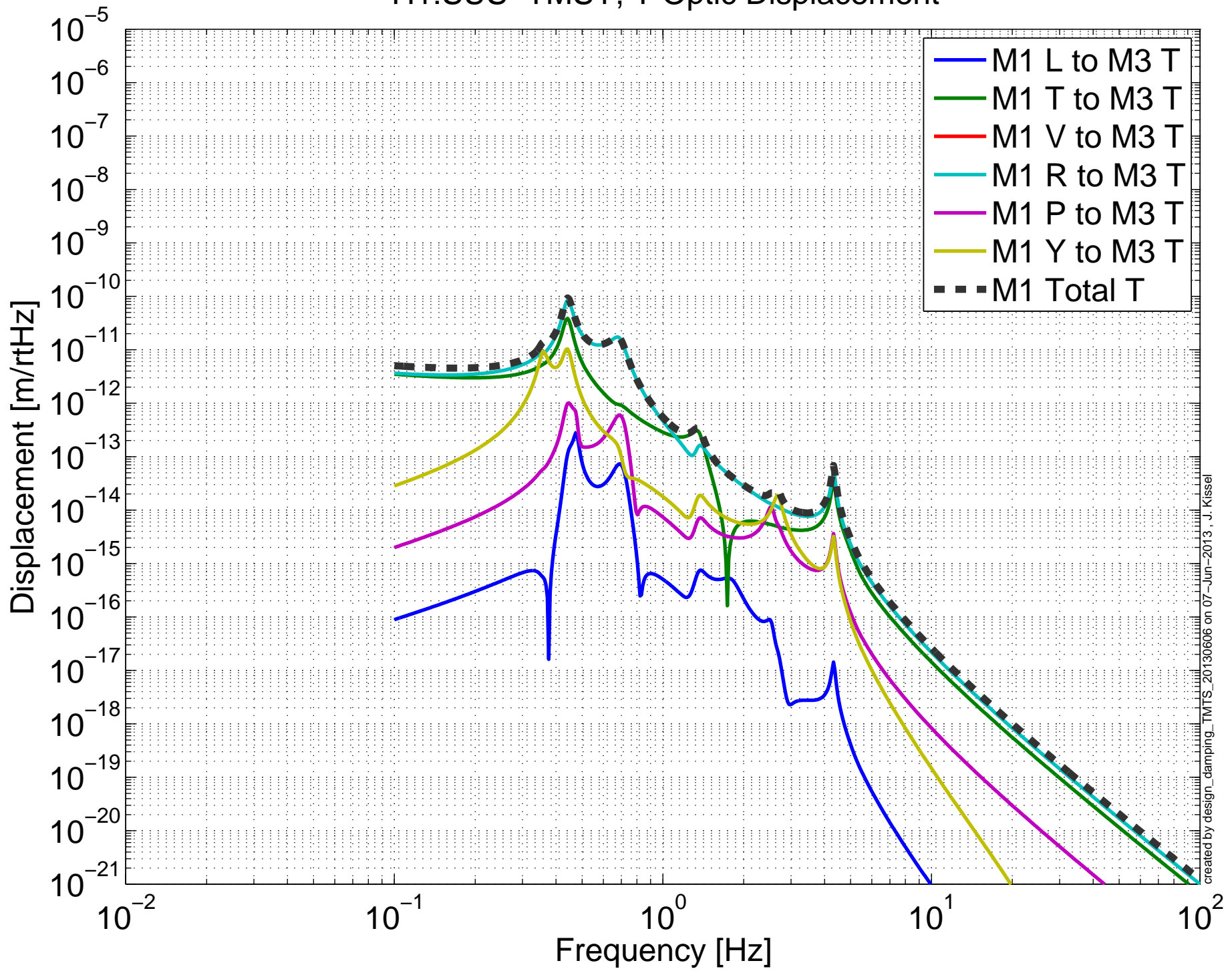


created by design\_damping\_TMTS\_20130606 on 07-Jun-2013 - J. Kissel

# Projected Top Mass Sensor > Optic Noise Budget H1:SUS-TMSY, T Optic Displacement



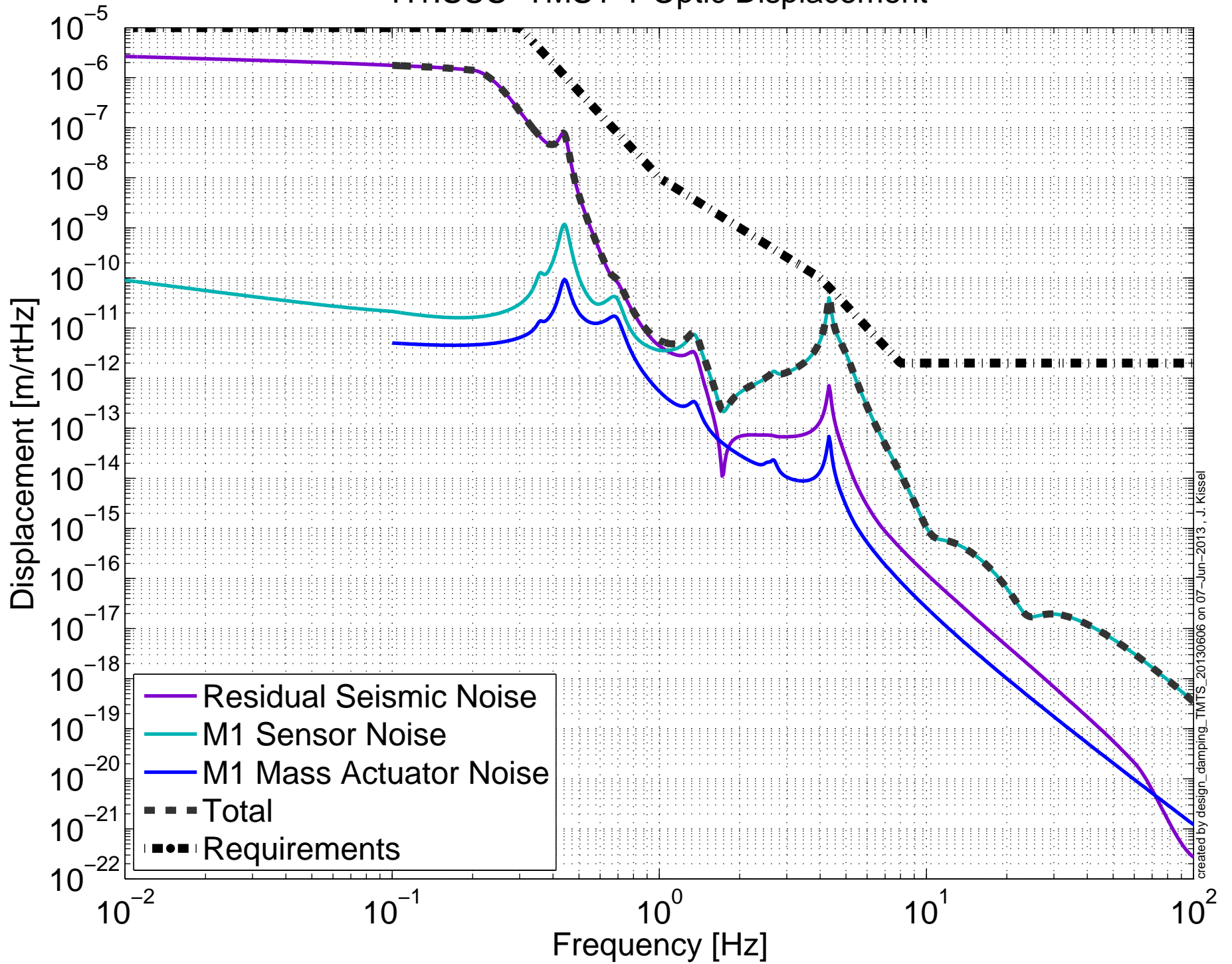
# Projected M1 Mass Actuator > Optic Noise Budget H1:SUS-TMSY, T Optic Displacement



created by design\_damping\_TMTS\_20130606 on 07-Jun-2013 - J. Kissel

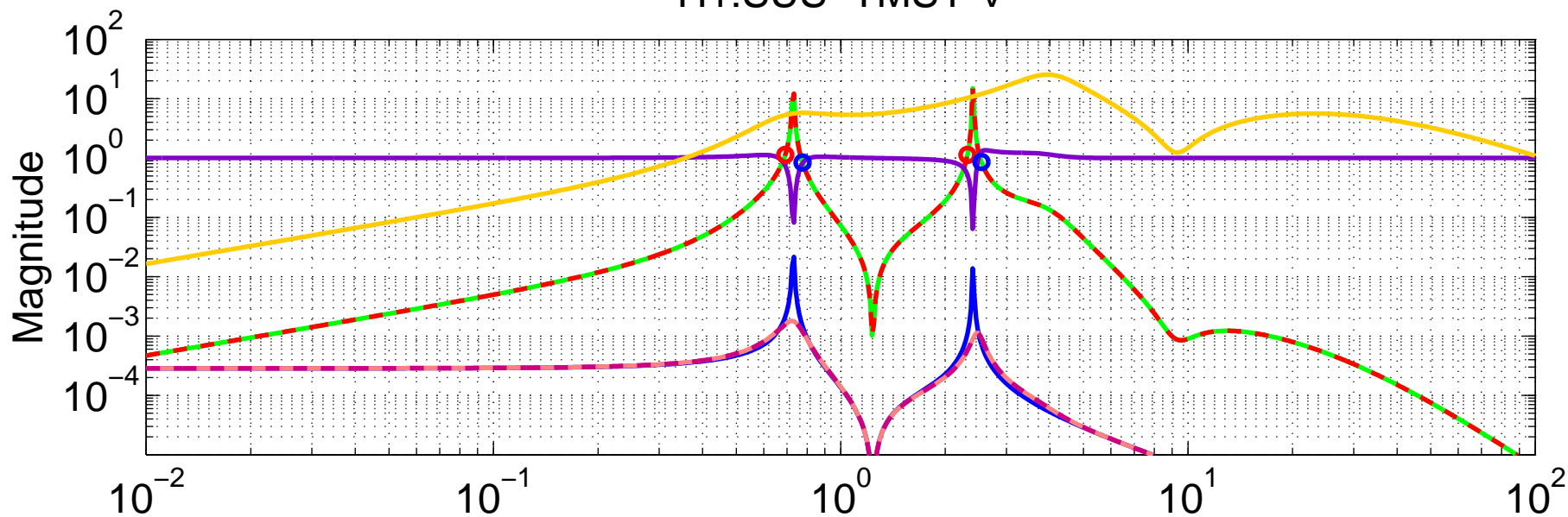
# Damping Loop Performance

## H1:SUS-TMSY T Optic Displacement

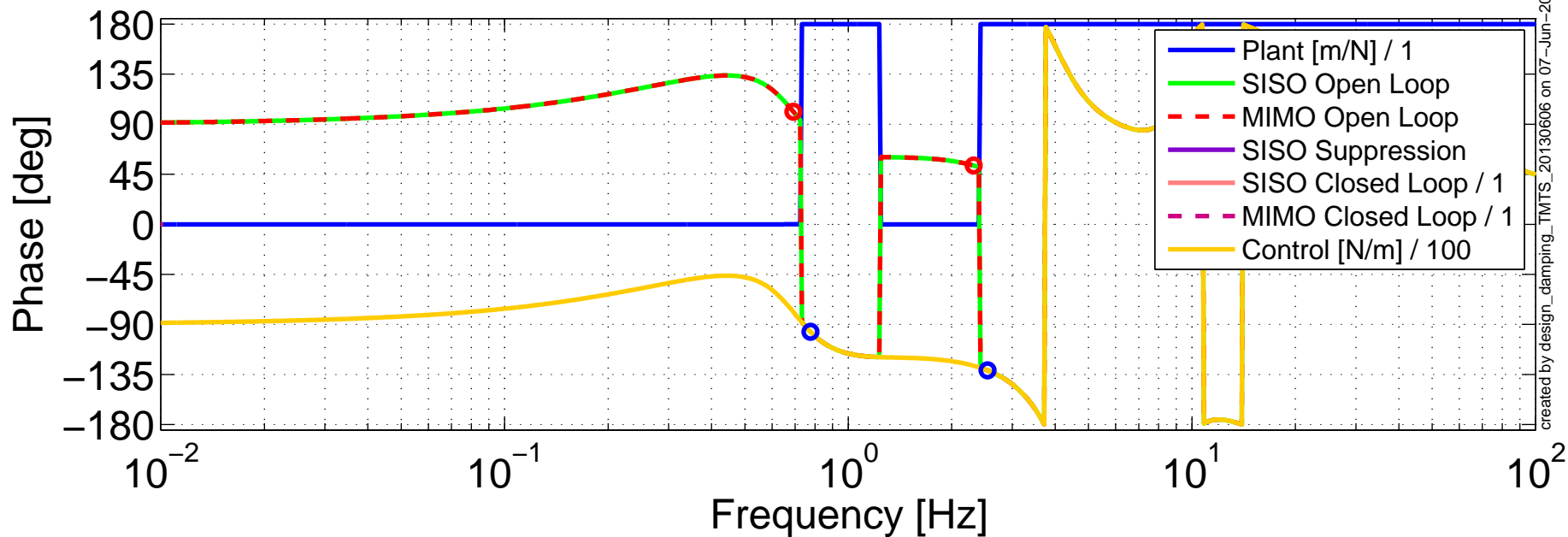


# Damping Loop Design

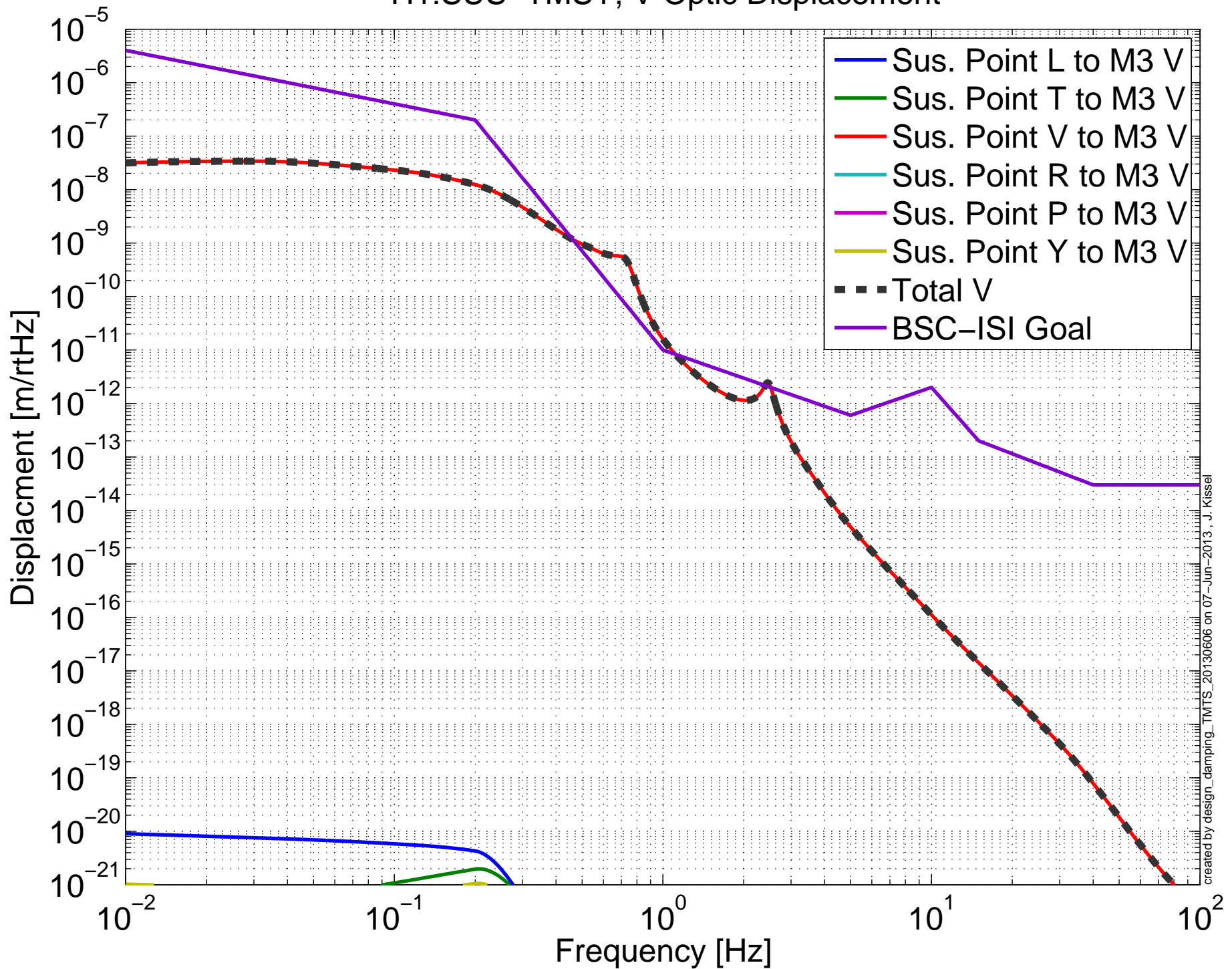
## H1:SUS-TMSY V



MIMO LUGF Phase Margins (red): [78.8 127] [deg]  
MIMO UUGF Phase Margins (blue): [83.4 48.7] [deg]

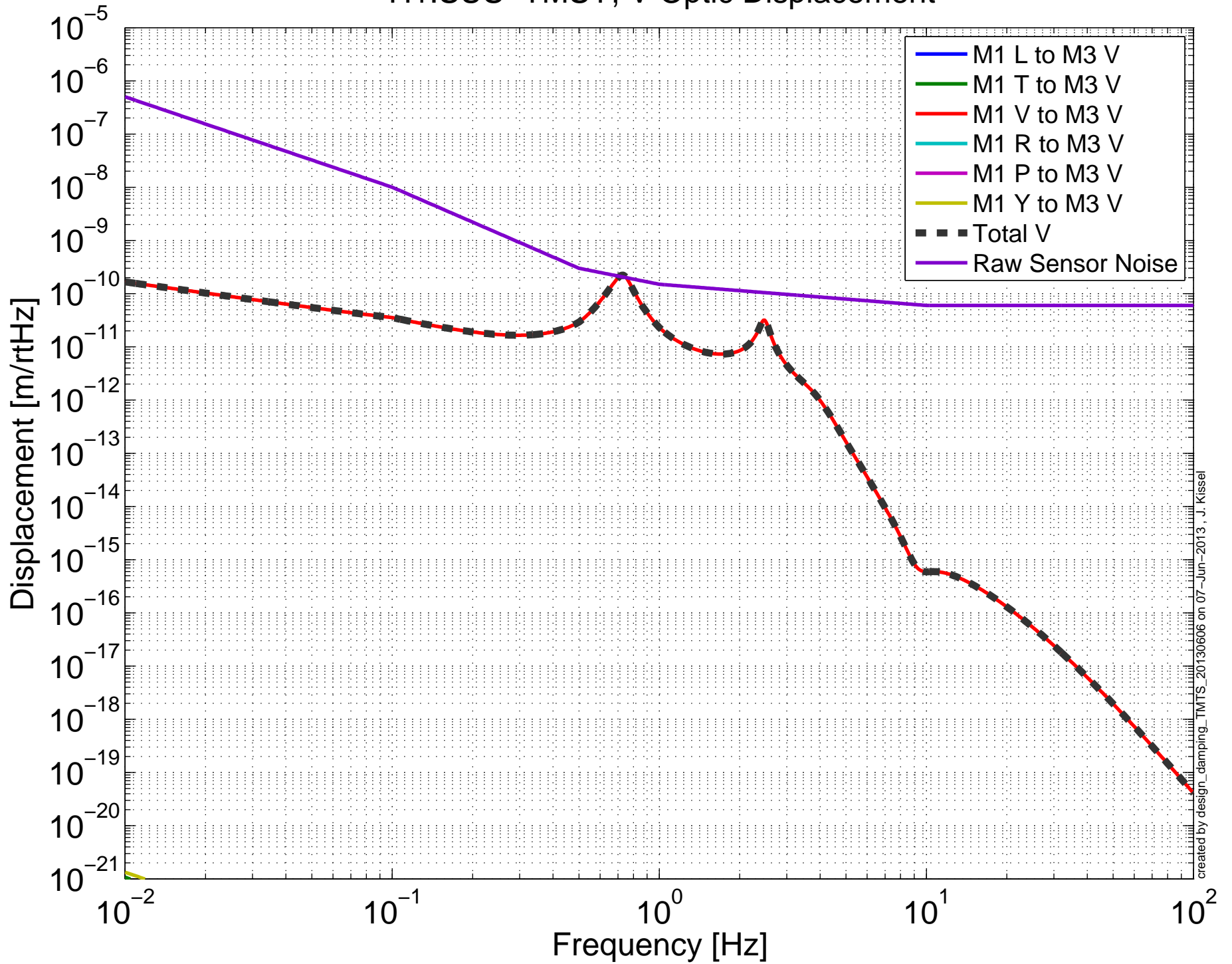


# Projected Sus. Point > Optic Seismic Noise Budget H1:SUS-TMSY, V Optic Displacement



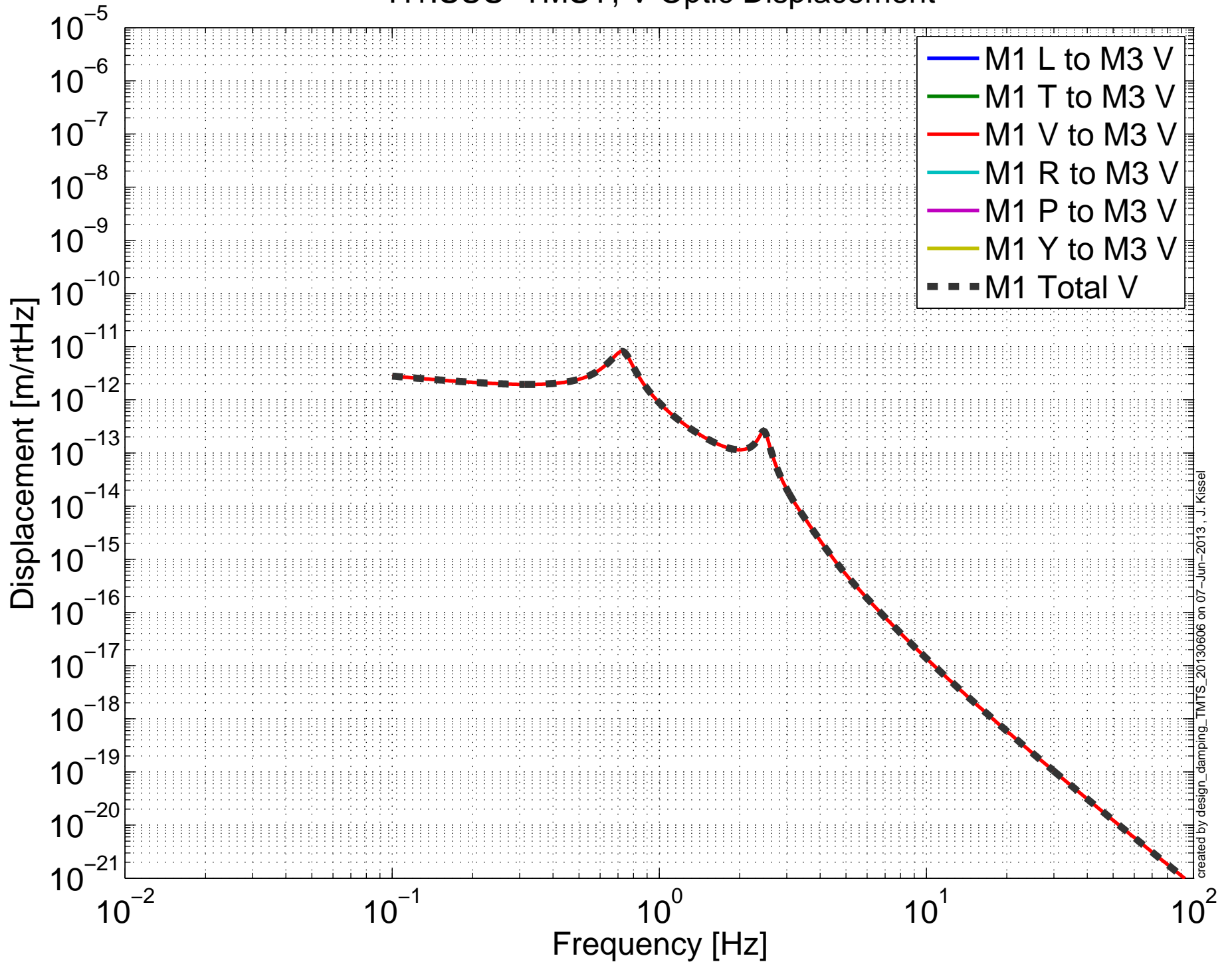
created by design\_damping\_TMTS\_20130606 on 07-Jun-2013 - J. Kissel

# Projected Top Mass Sensor > Optic Noise Budget H1:SUS-TMSY, V Optic Displacement



created by design\_damping\_TMS\_20130606 on 07-Jun-2013 - J. Kissel

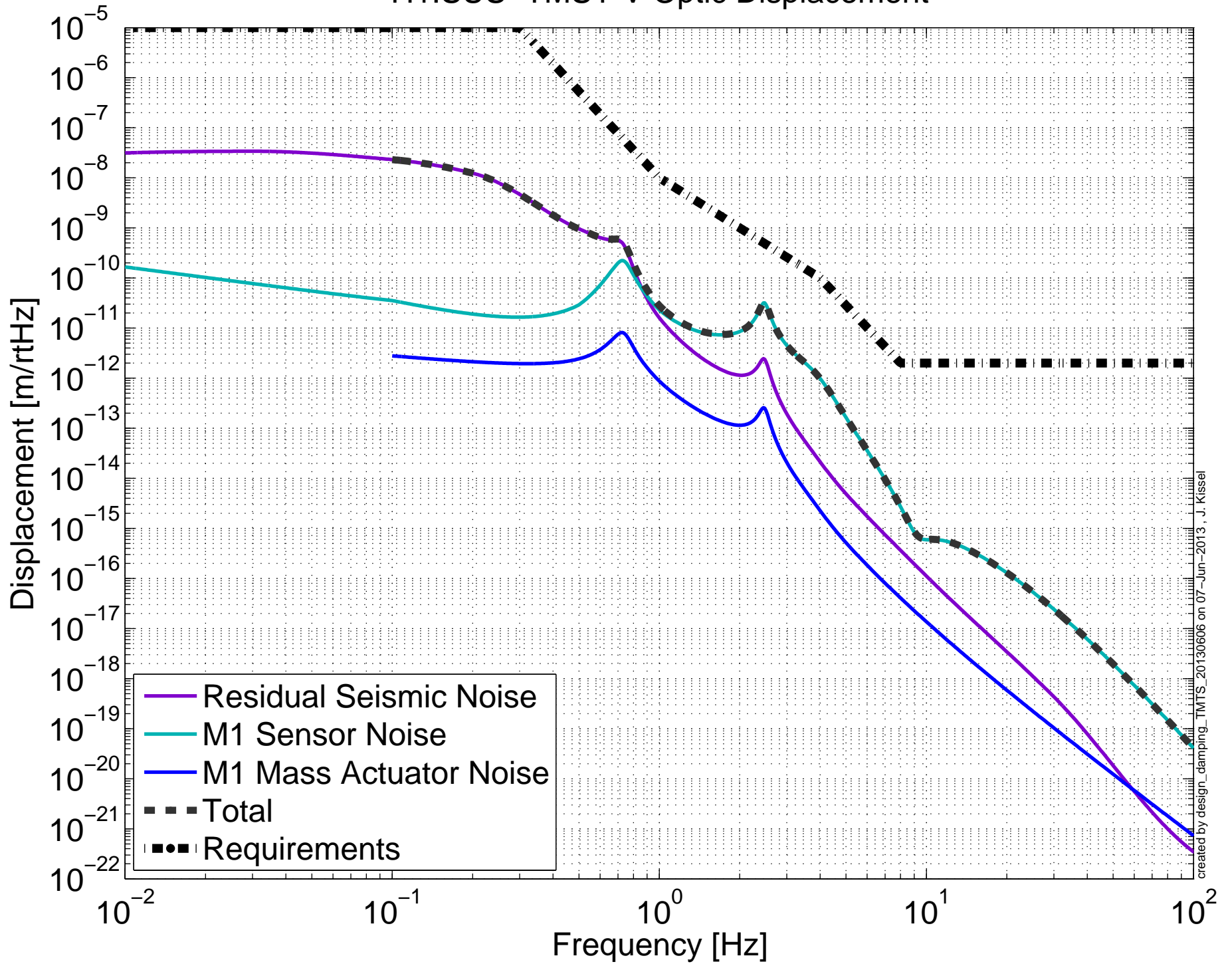
# Projected M1 Mass Actuator > Optic Noise Budget H1:SUS-TMSY, V Optic Displacement



created by design\_damping\_TMS\_20130606 on 07-Jun-2013 - J. Kissel

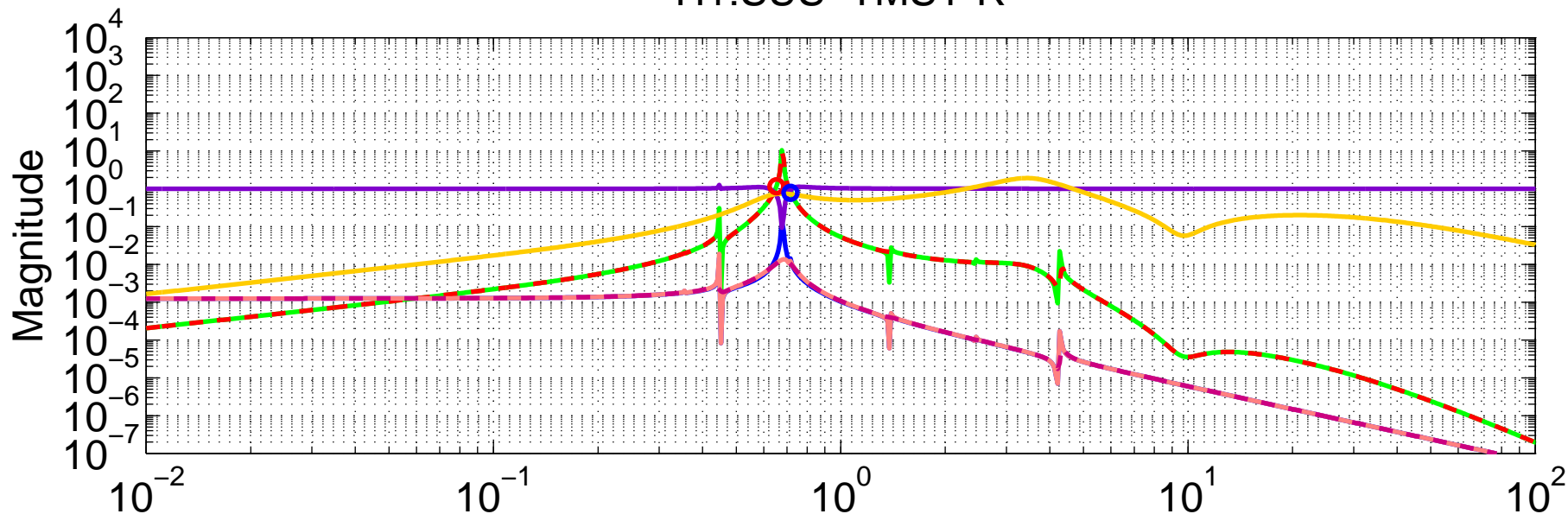


# Damping Loop Performance H1:SUS-TMSY V Optic Displacement

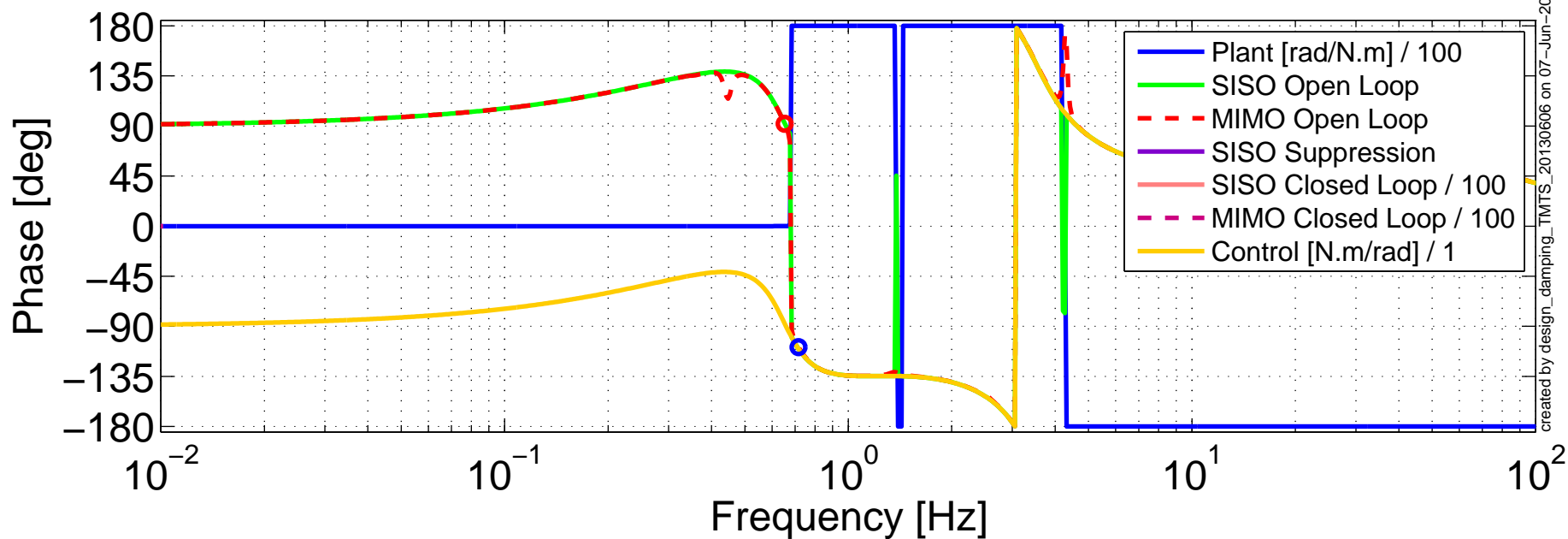


# Damping Loop Design

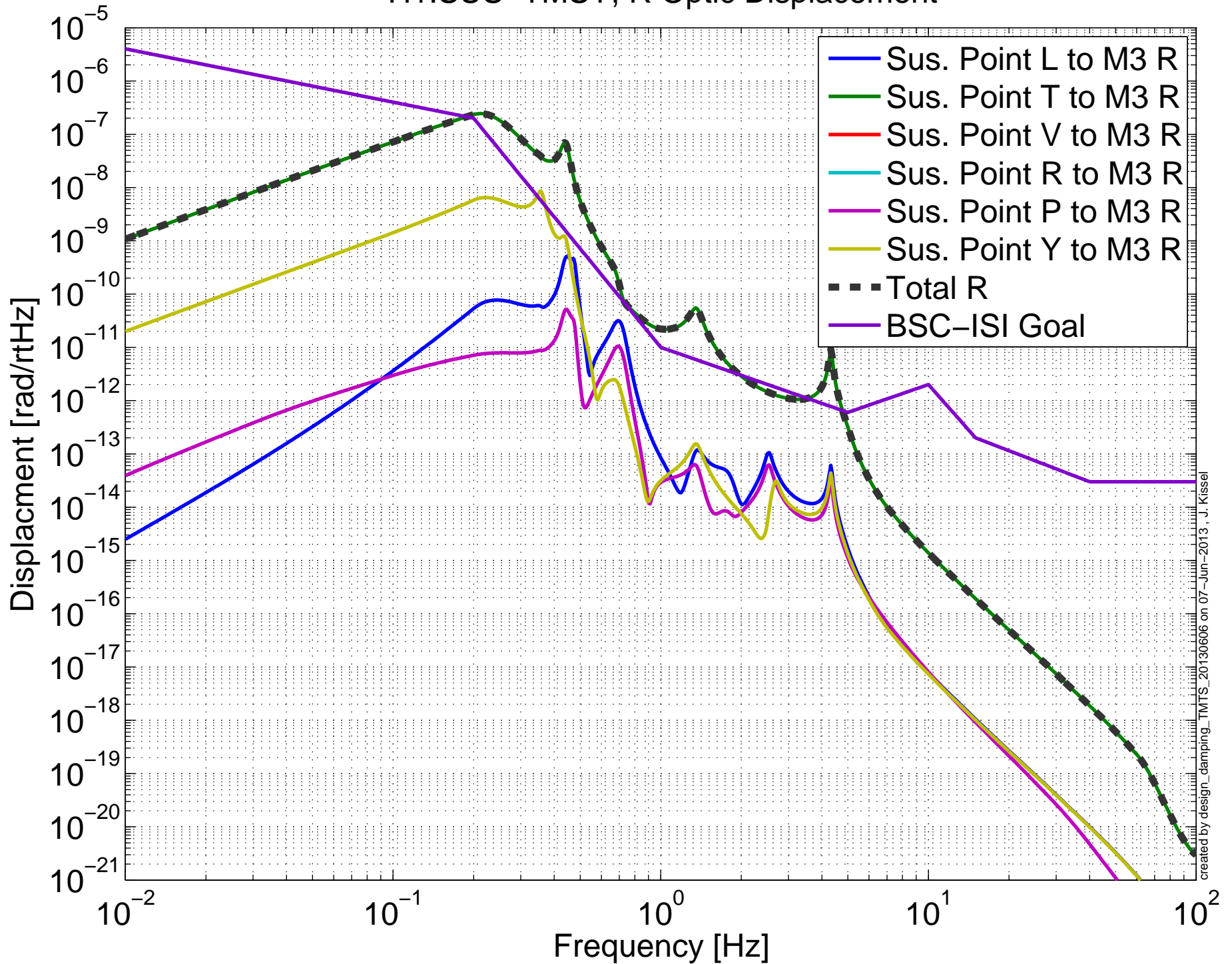
## H1:SUS-TMSY R



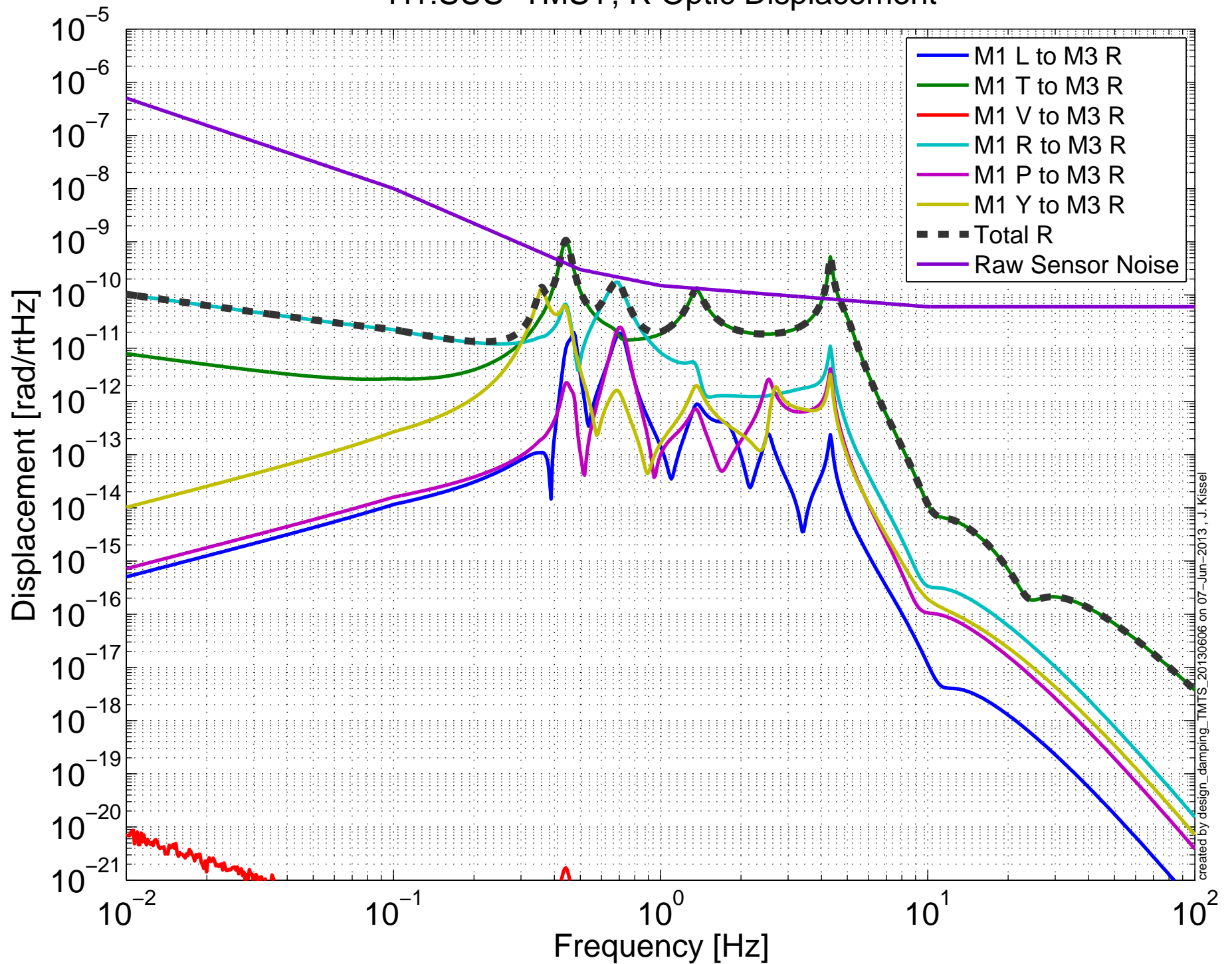
MIMO LUGF Phase Margins (red): [88.1] [deg]  
MIMO UUGF Phase Margins (blue): [71.3] [deg]



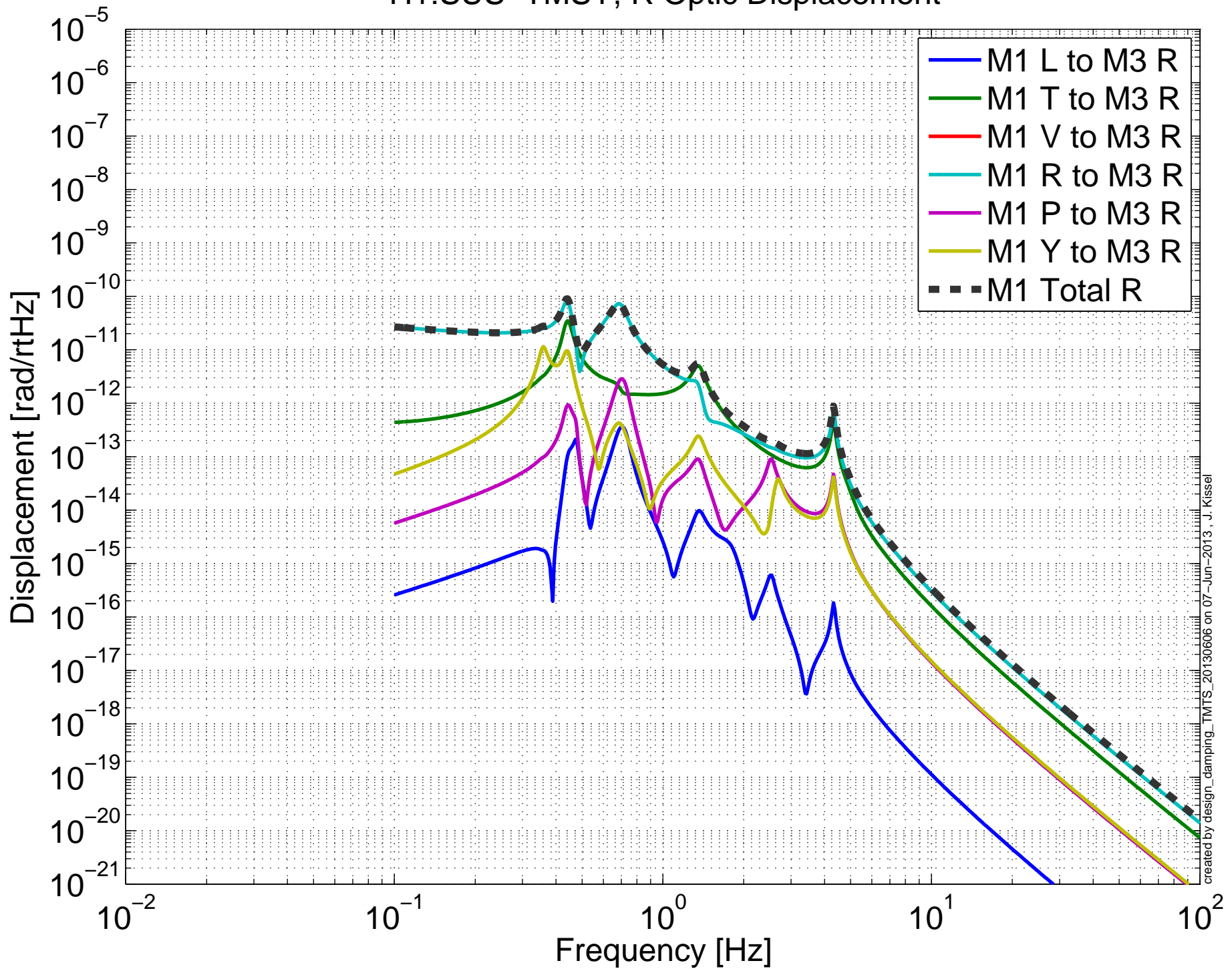
# Projected Sus. Point > Optic Seismic Noise Budget H1:SUS-TMSY, R Optic Displacement



# Projected Top Mass Sensor > Optic Noise Budget H1:SUS-TMSY, R Optic Displacement



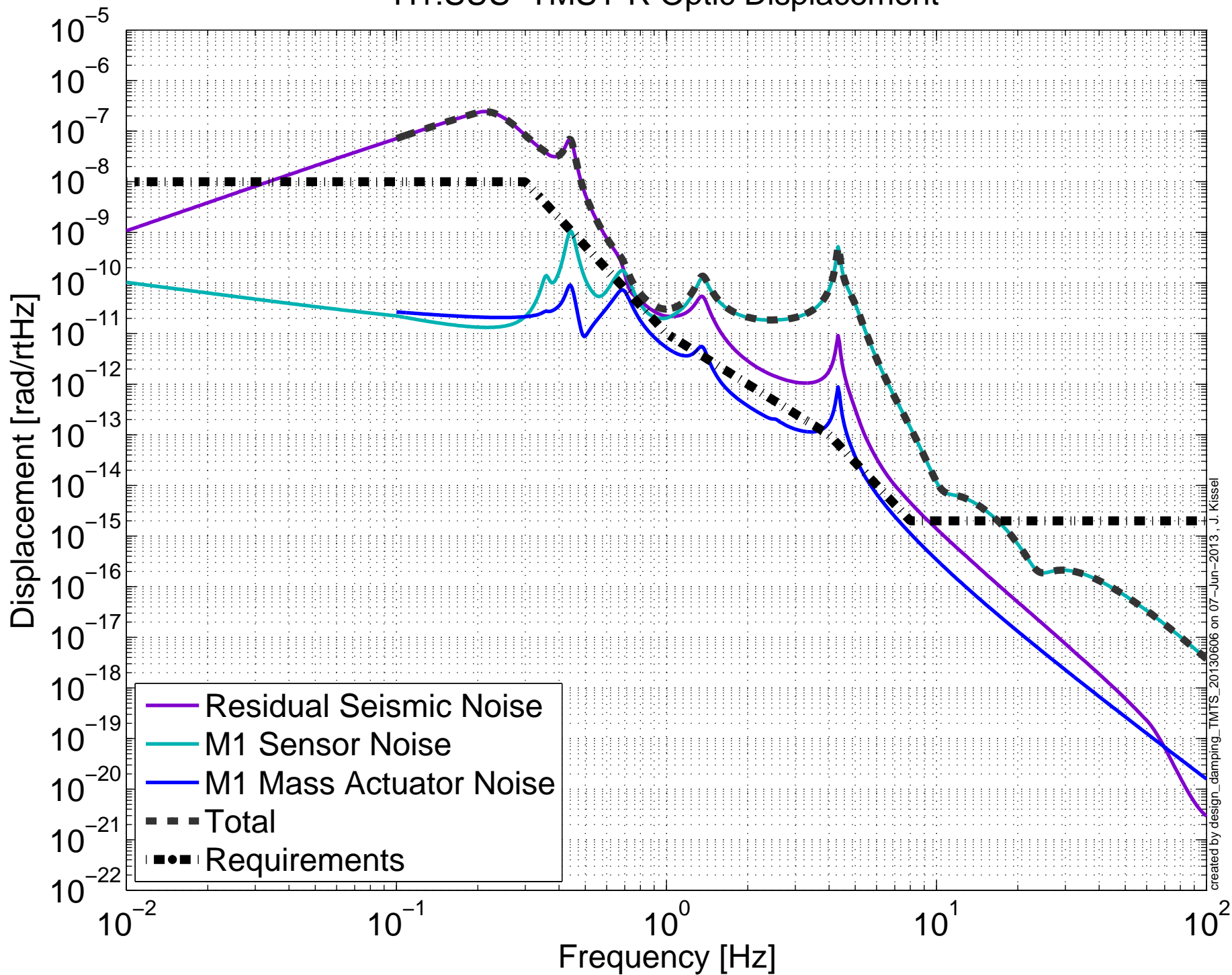
# Projected M1 Mass Actuator > Optic Noise Budget H1:SUS-TMSY, R Optic Displacement



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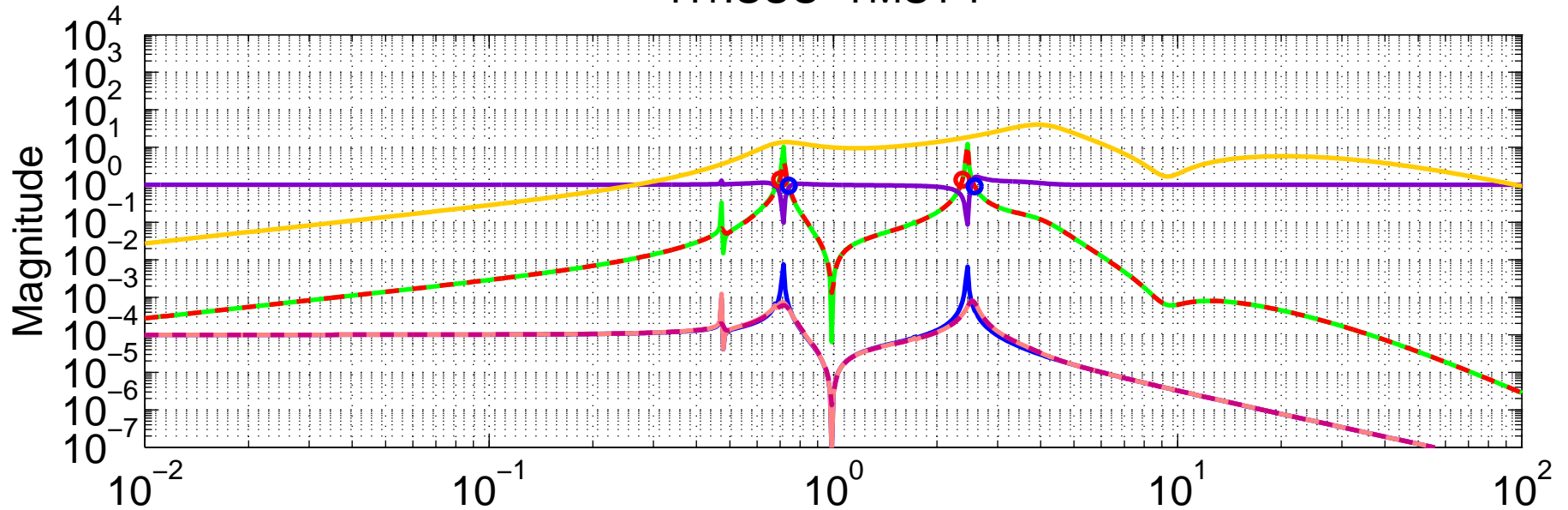
# Damping Loop Performance

## H1:SUS-TMSY R Optic Displacement

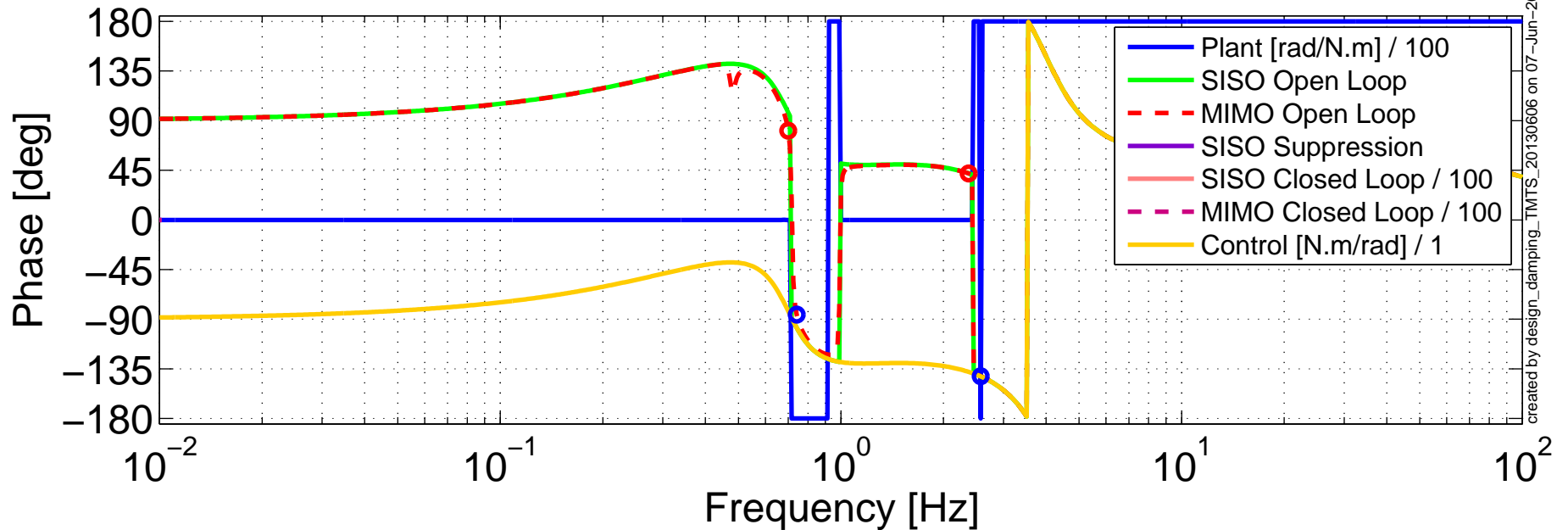


# Damping Loop Design

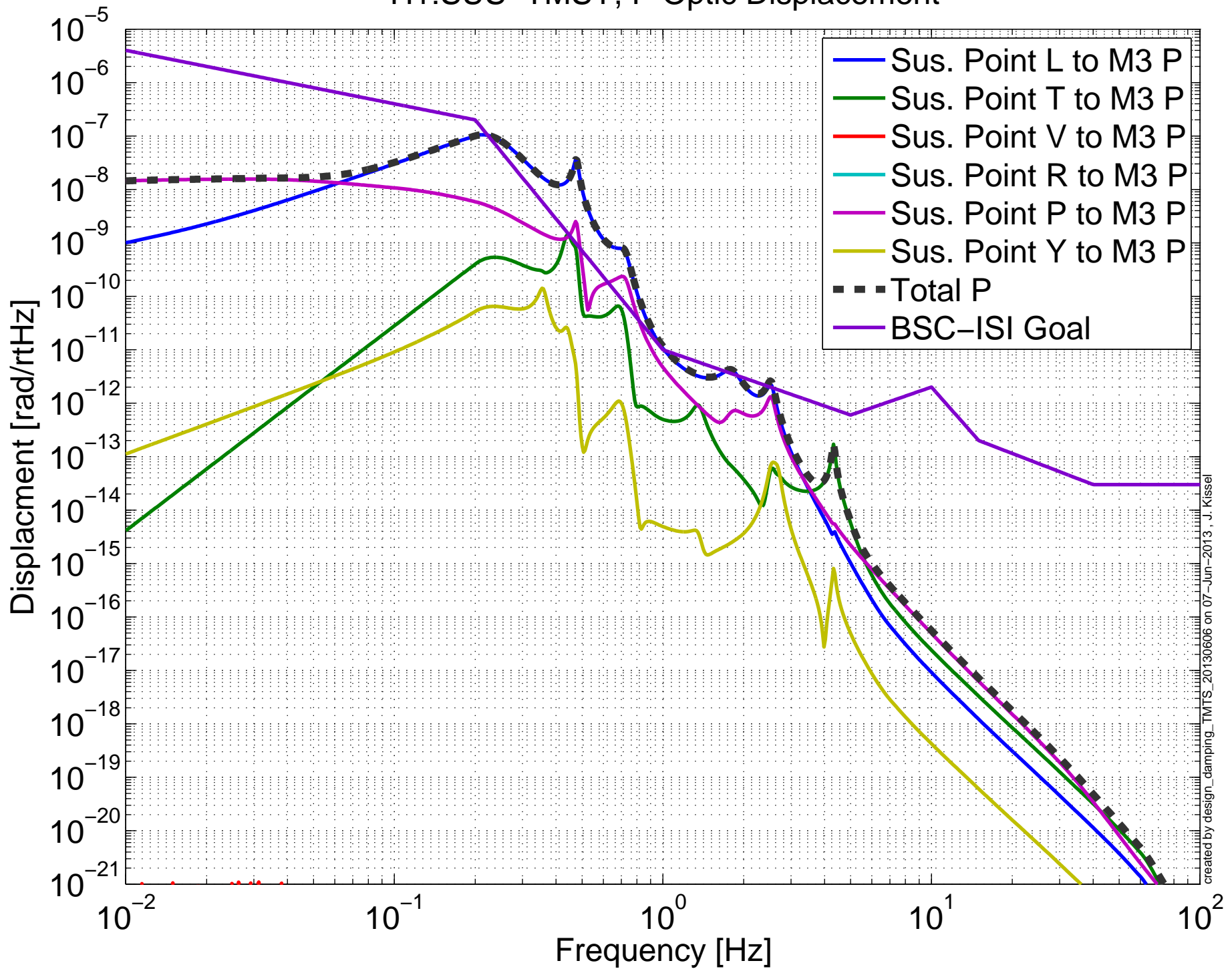
## H1:SUS-TMSY P



MIMO LUGF Phase Margins (red): [99.1 138] [deg]  
MIMO UUGF Phase Margins (blue): [94.1 38.4] [deg]



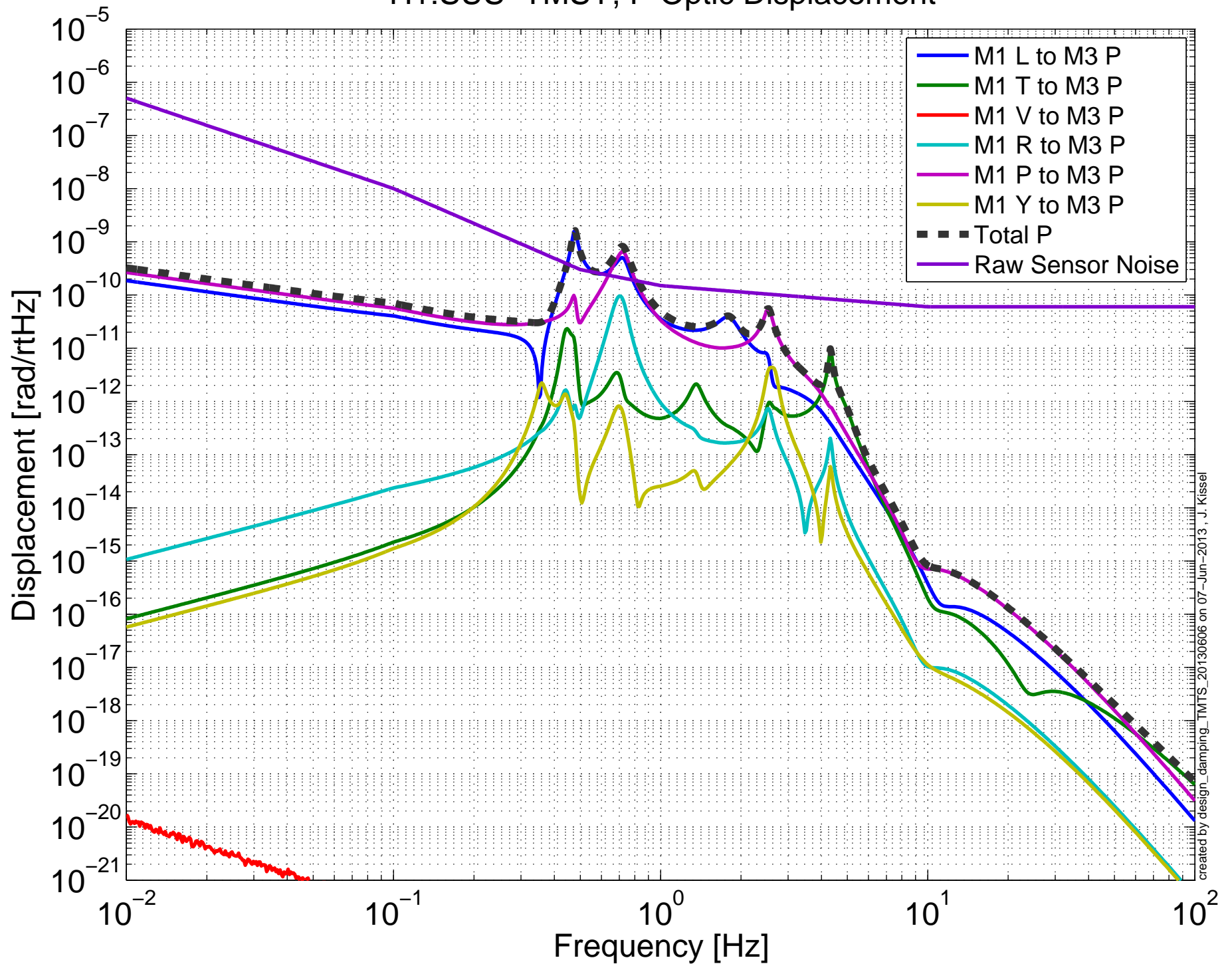
# Projected Sus. Point > Optic Seismic Noise Budget H1:SUS-TMSY, P Optic Displacement



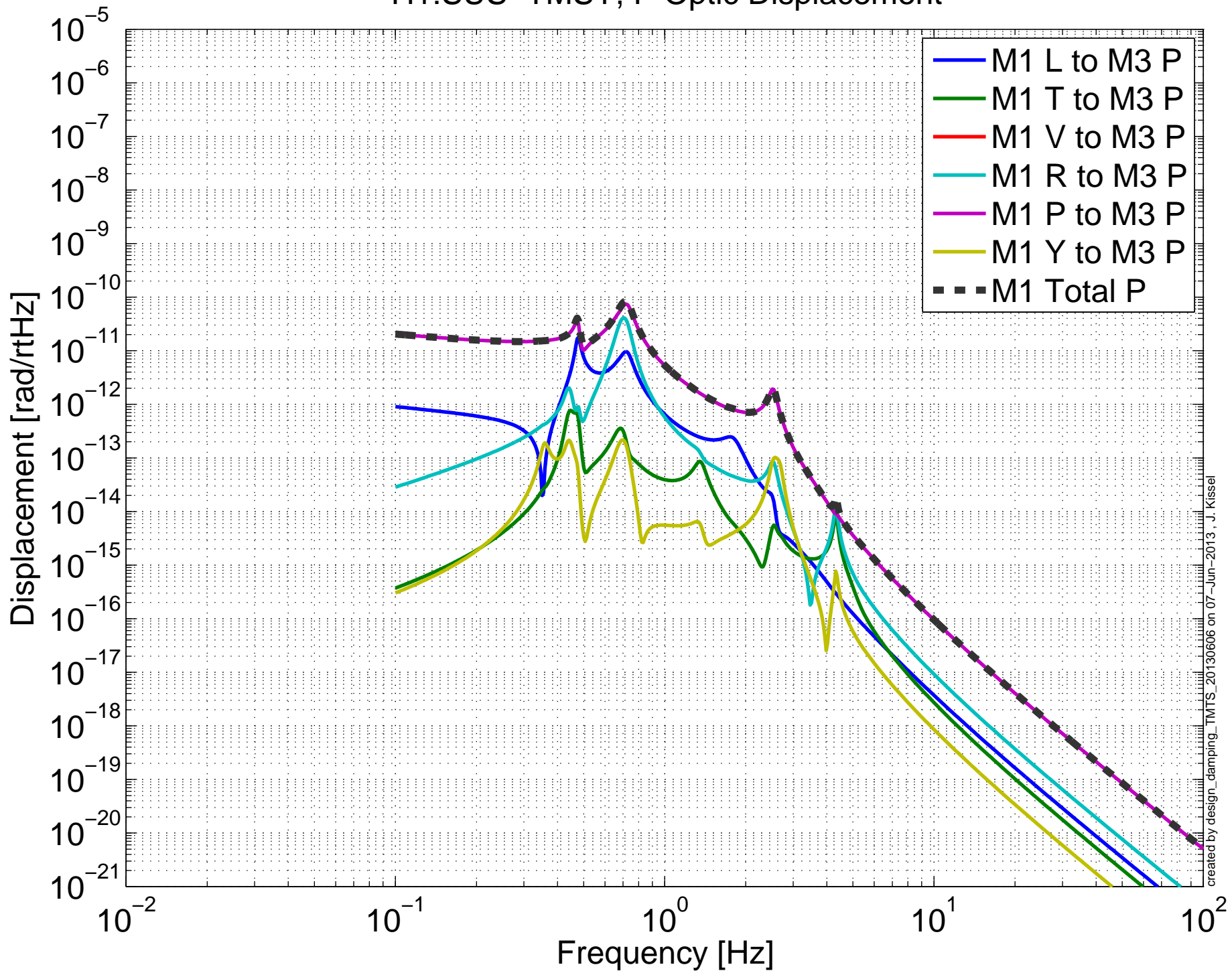
created by design\_damping\_TMTS\_20130606 on 07-Jun-2013 - J. Kissel



# Projected Top Mass Sensor > Optic Noise Budget H1:SUS-TMSY, P Optic Displacement



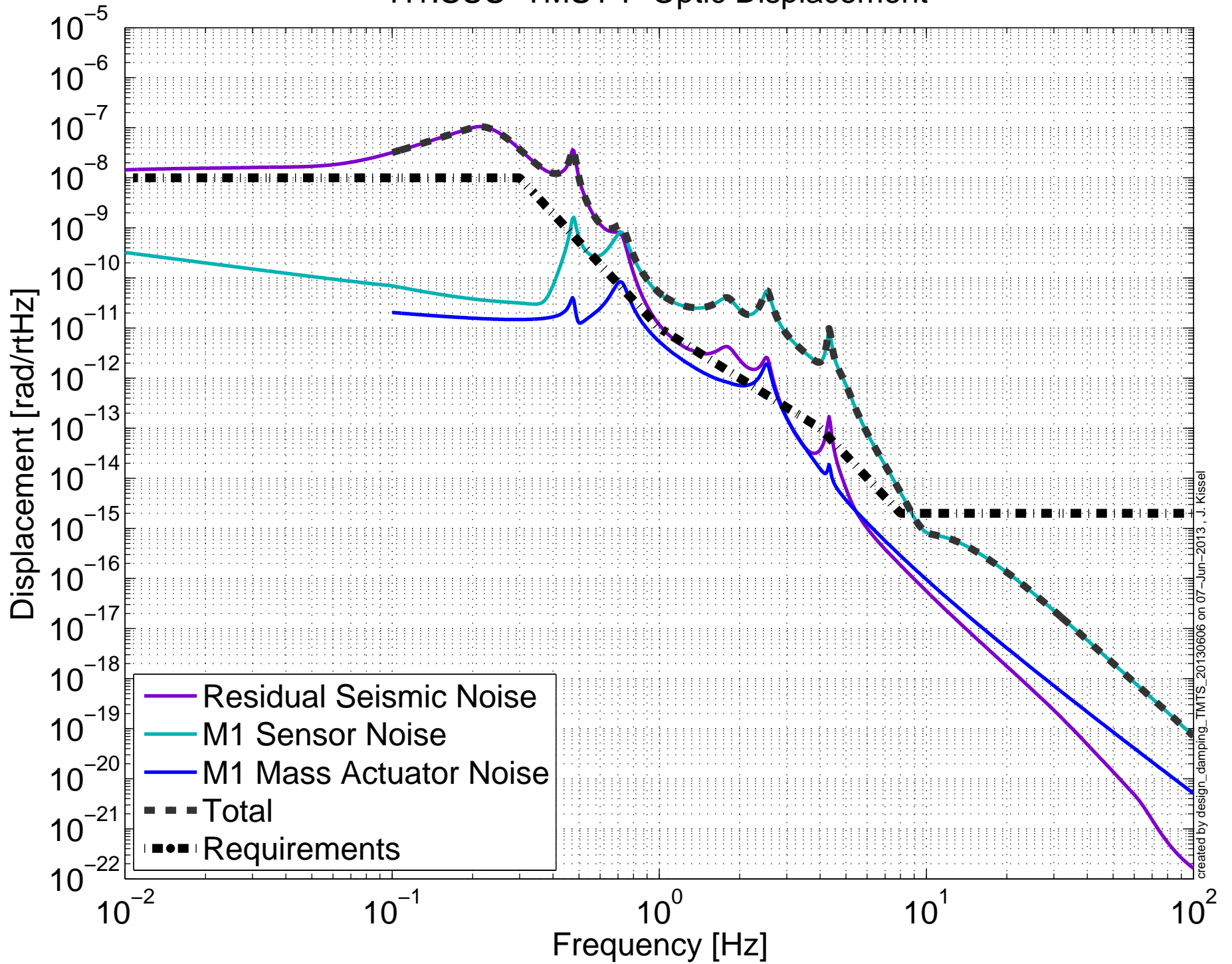
# Projected M1 Mass Actuator > Optic Noise Budget H1:SUS-TMSY, P Optic Displacement



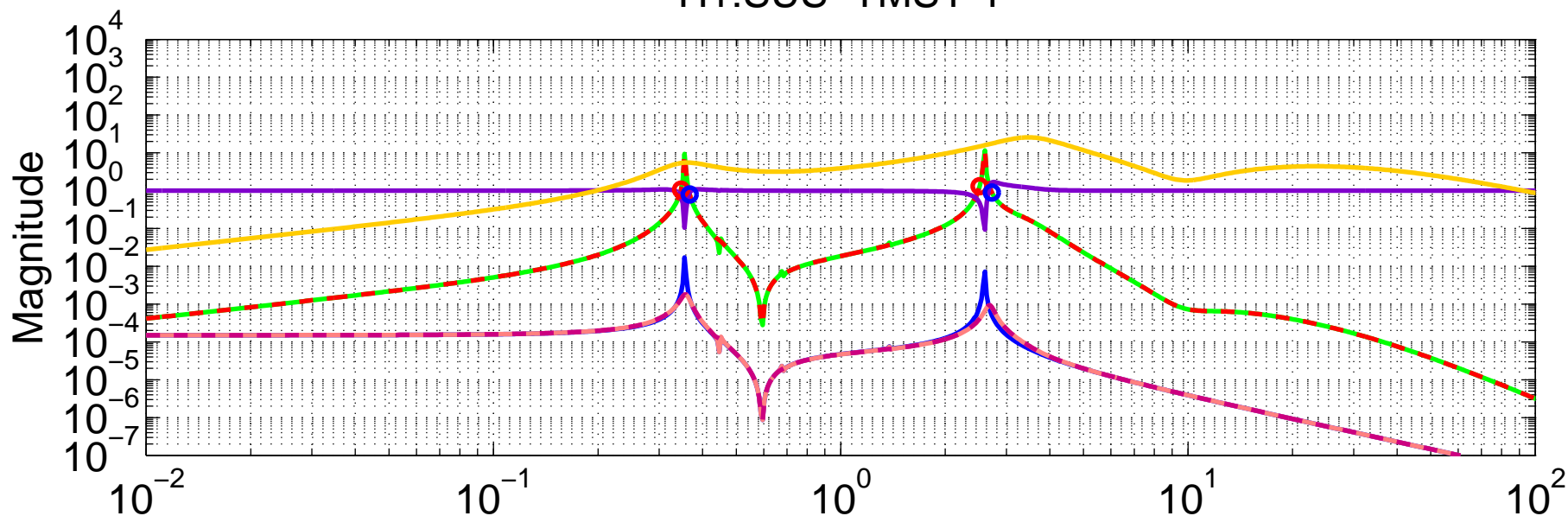
created by design\_damping\_TMSY\_20130606 on 07-Jun-2013 - J. Kissel

# Damping Loop Performance

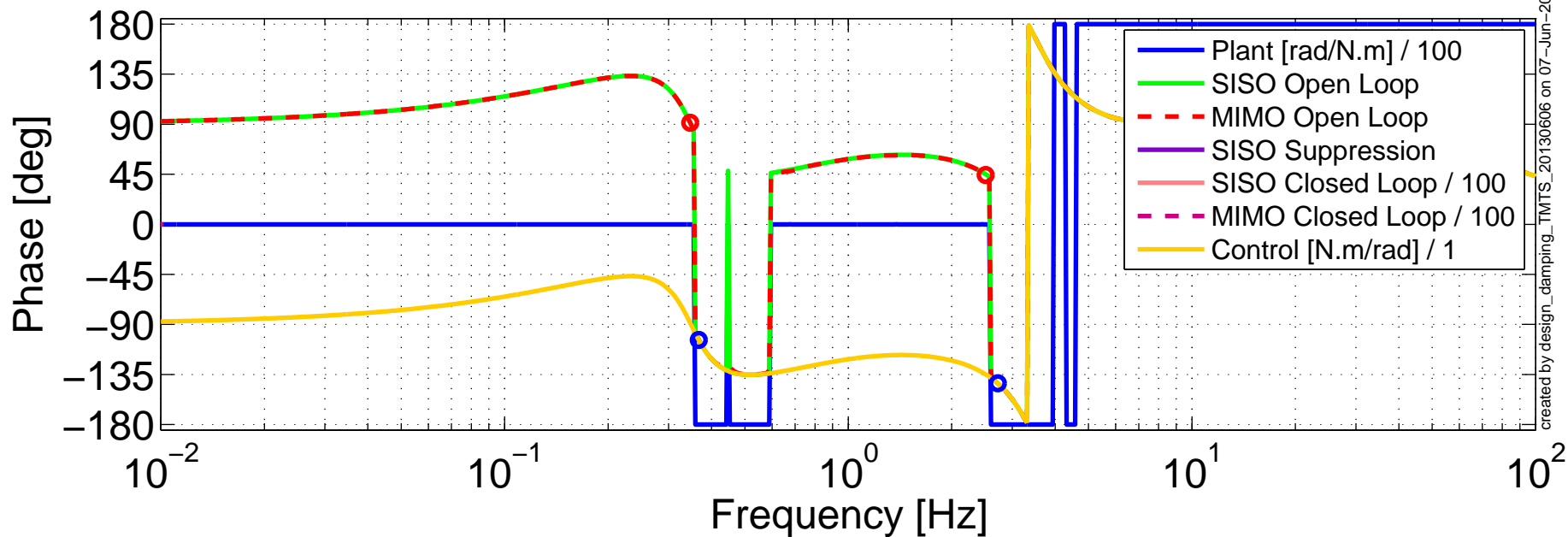
## H1:SUS-TMSY P Optic Displacement



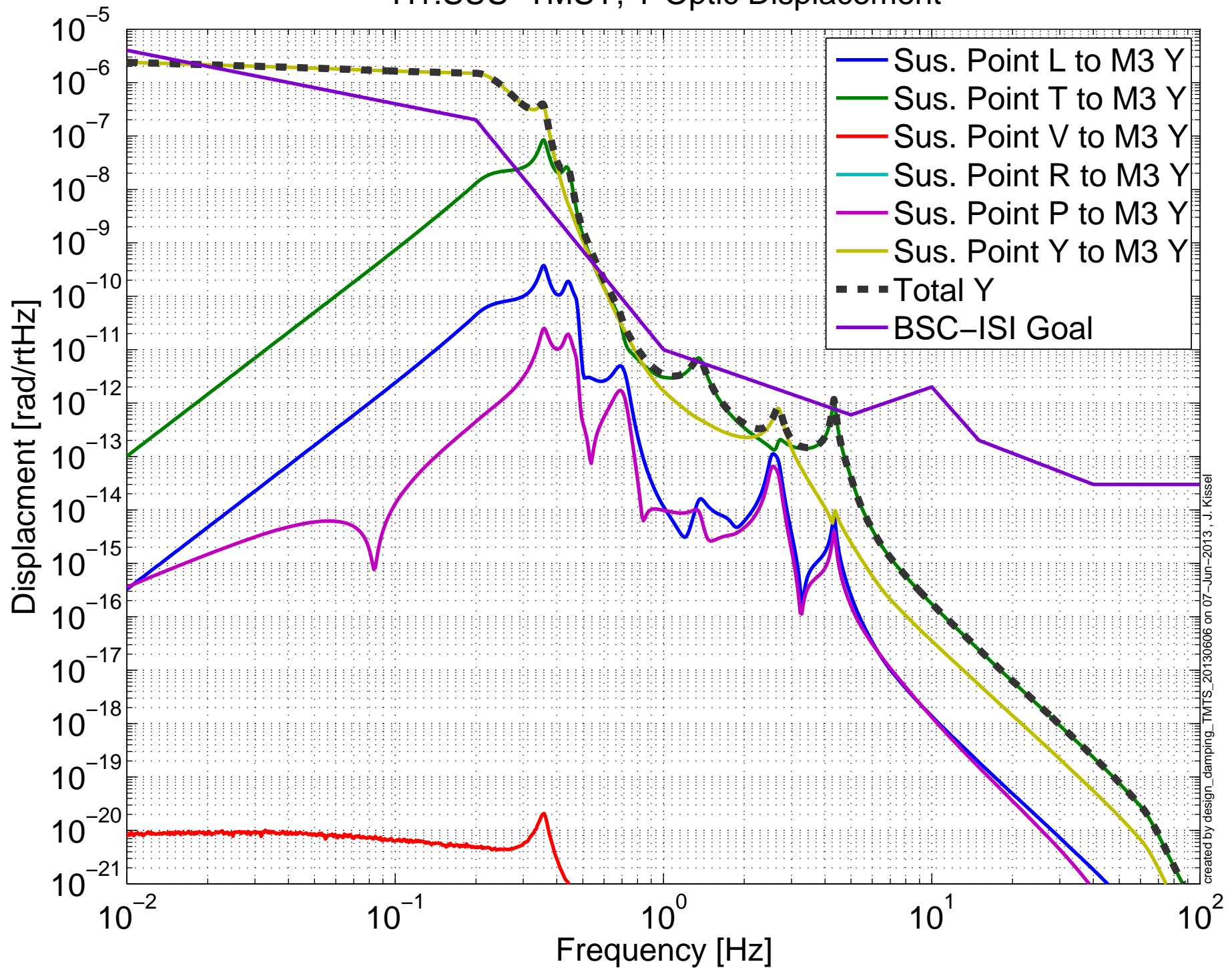
# Damping Loop Design H1:SUS-TMSY Y



MIMO LUGF Phase Margins (red): [88.7 136] [deg]  
MIMO UUGF Phase Margins (blue): [76 37.1] [deg]

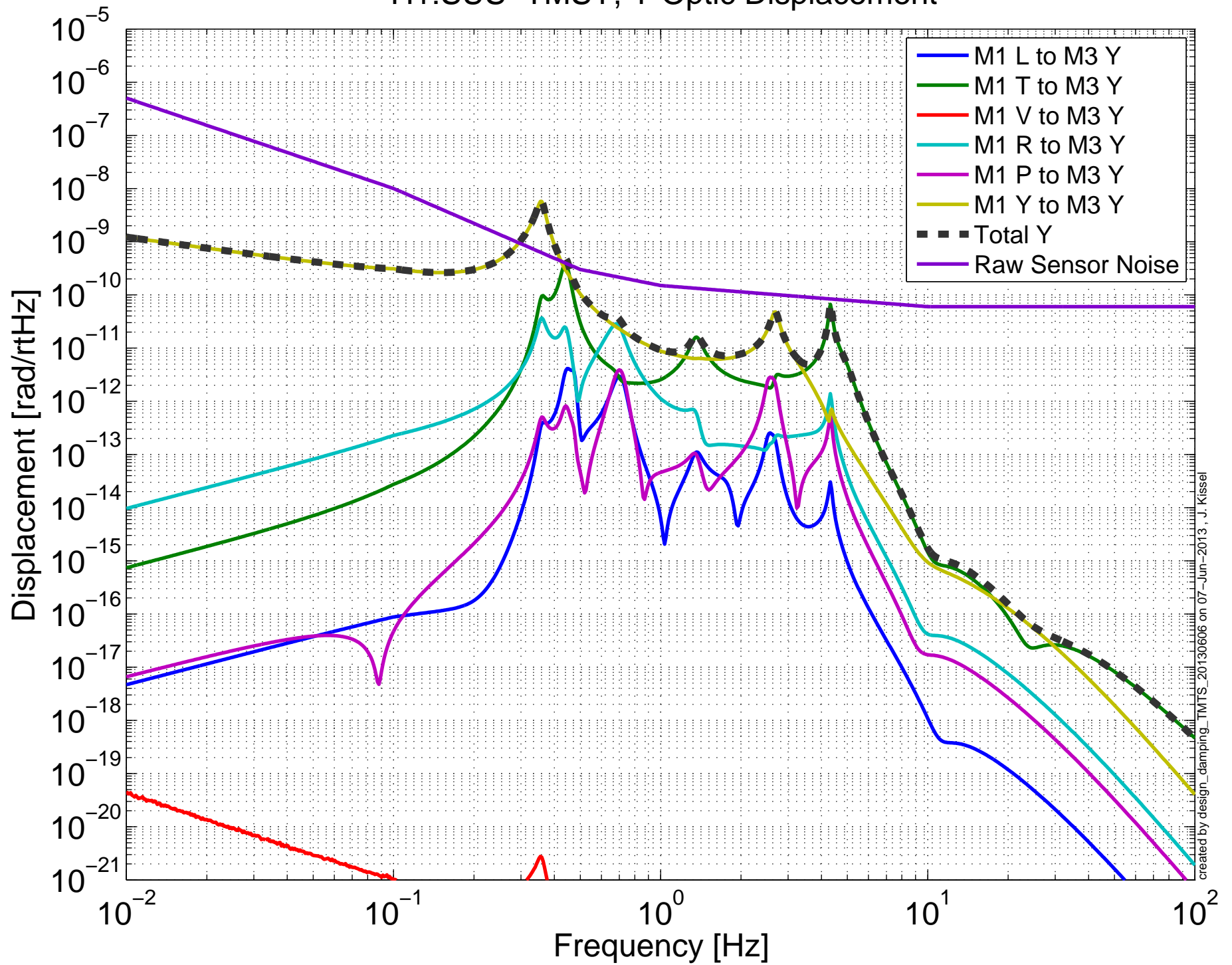


# Projected Sus. Point > Optic Seismic Noise Budget H1:SUS-TMSY, Y Optic Displacement

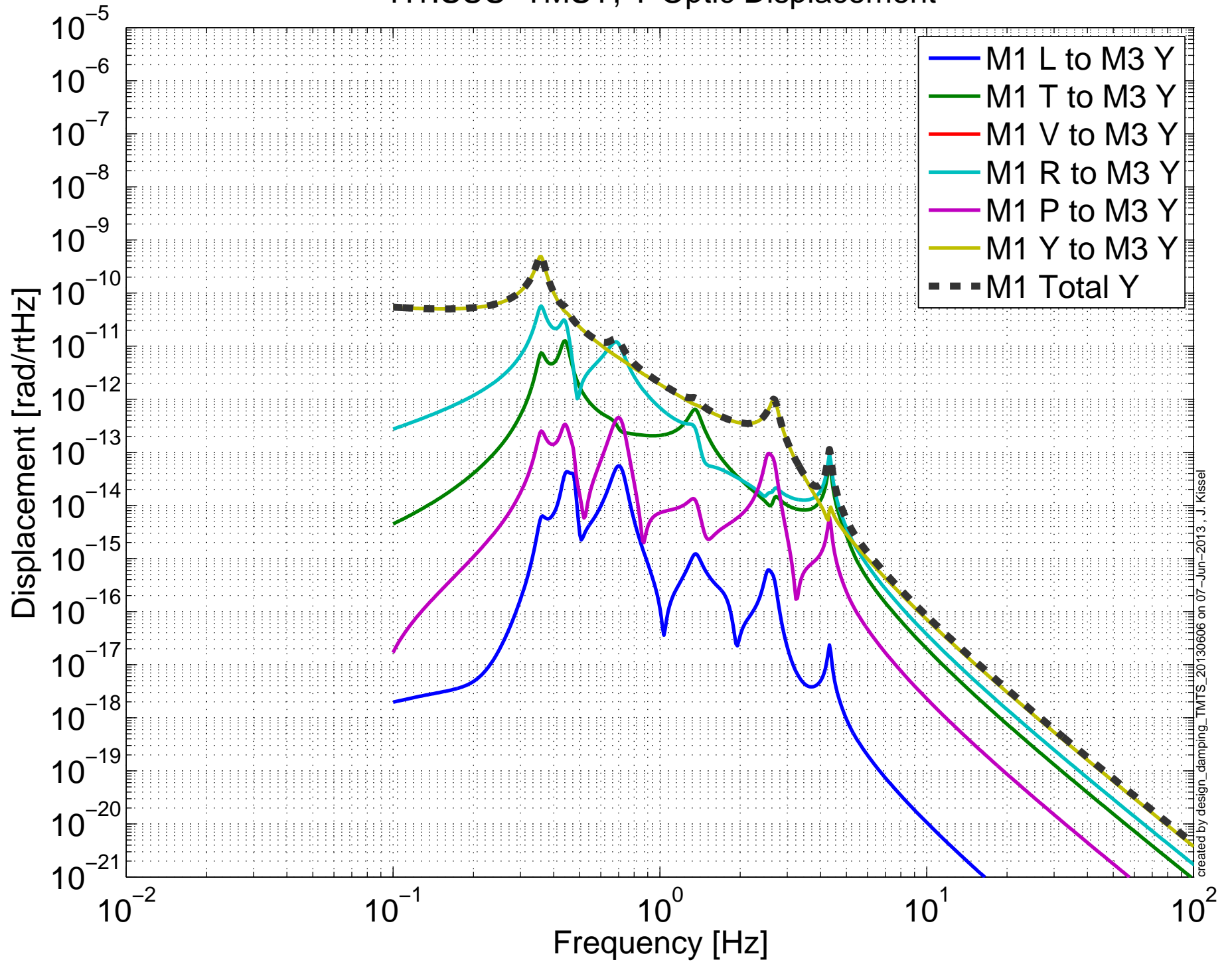


created by design\_damping\_TMFS\_20130606 on 07-Jun-2013 - J. Kissel

# Projected Top Mass Sensor > Optic Noise Budget H1:SUS-TMSY, Y Optic Displacement

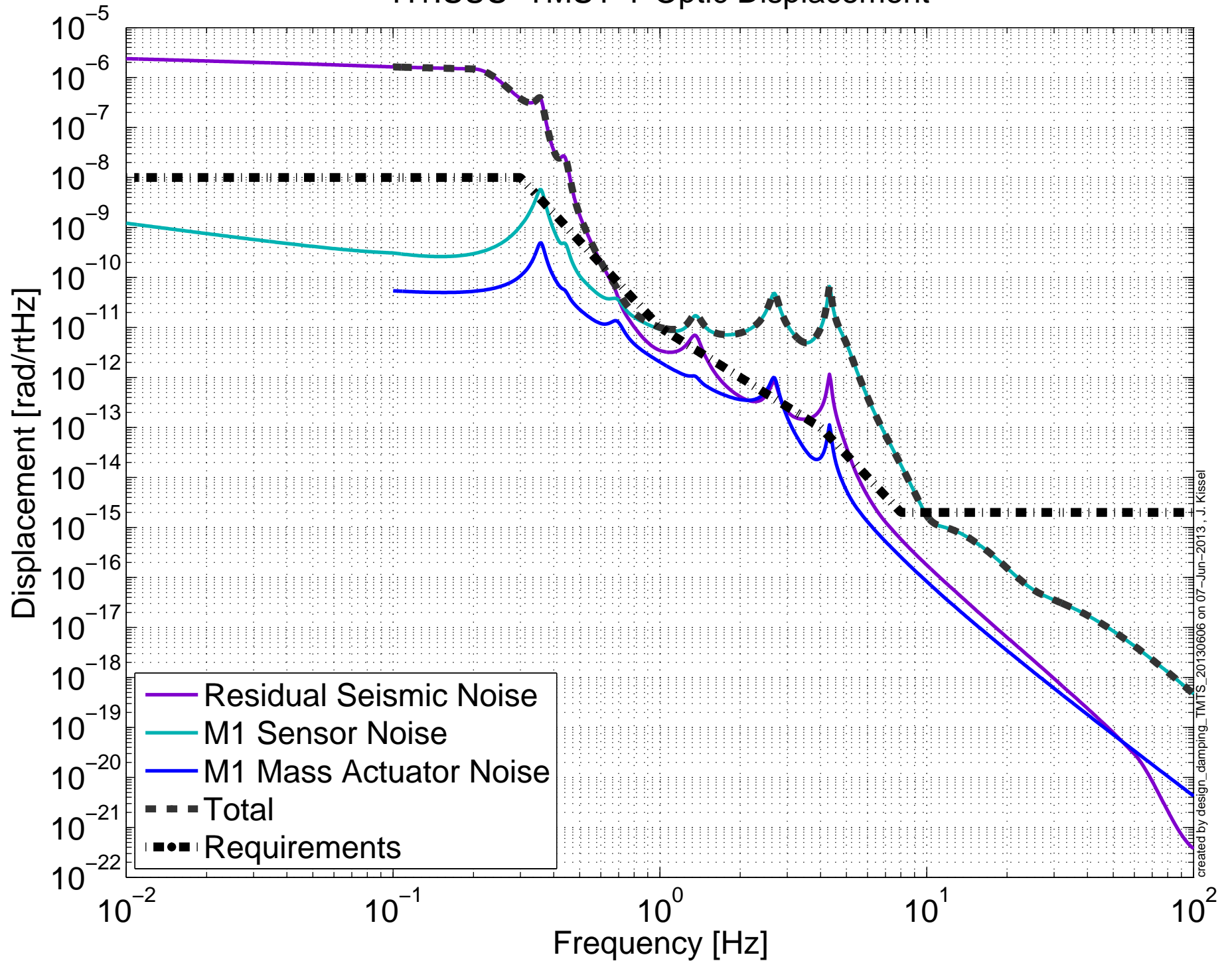


# Projected M1 Mass Actuator > Optic Noise Budget H1:SUS-TMSY, Y Optic Displacement



# Damping Loop Performance

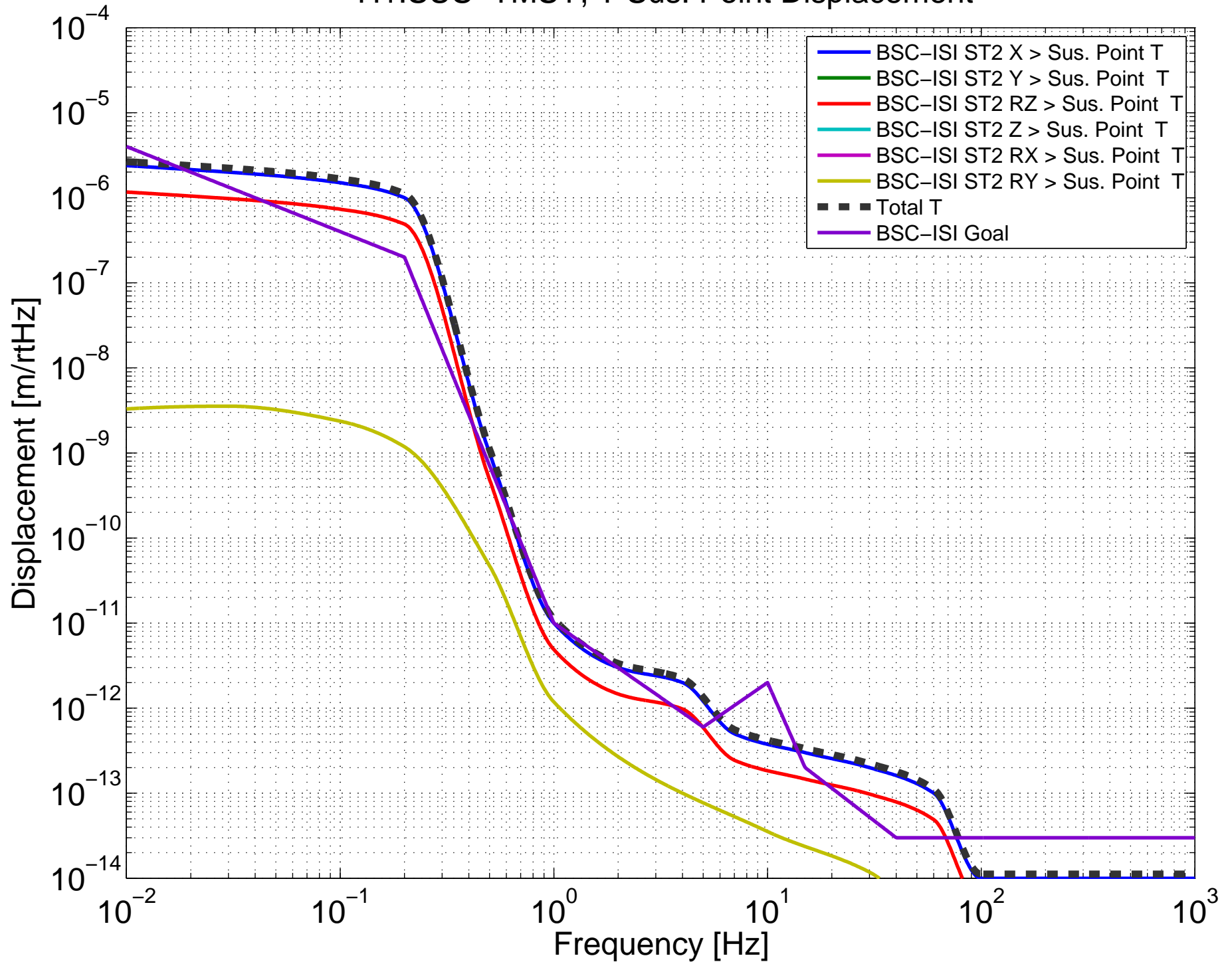
## H1:SUS-TMSY Y Optic Displacement







# Projected ISI Seismic Noise Budget H1:SUS-TMSY, T Sus. Point Displacement





# Projected ISI Seismic Noise Budget H1:SUS-TMSY, R Sus. Point Displacement

