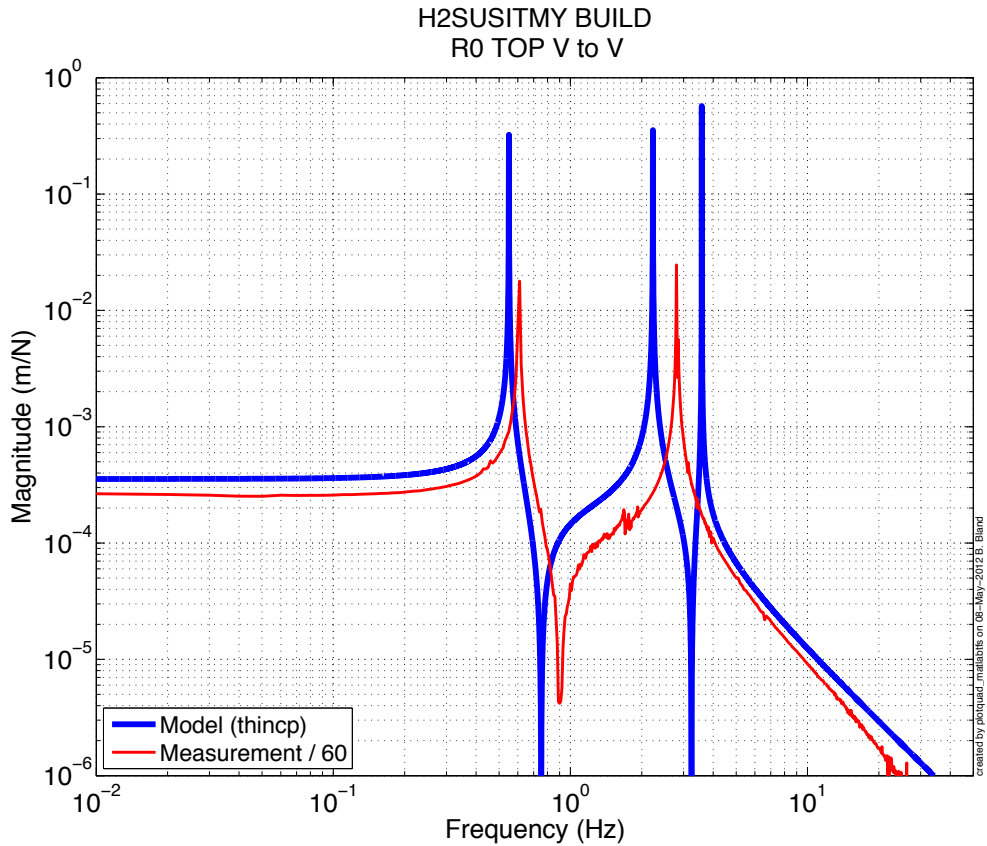


## Vertical TFs with only two peaks – a rogues gallery

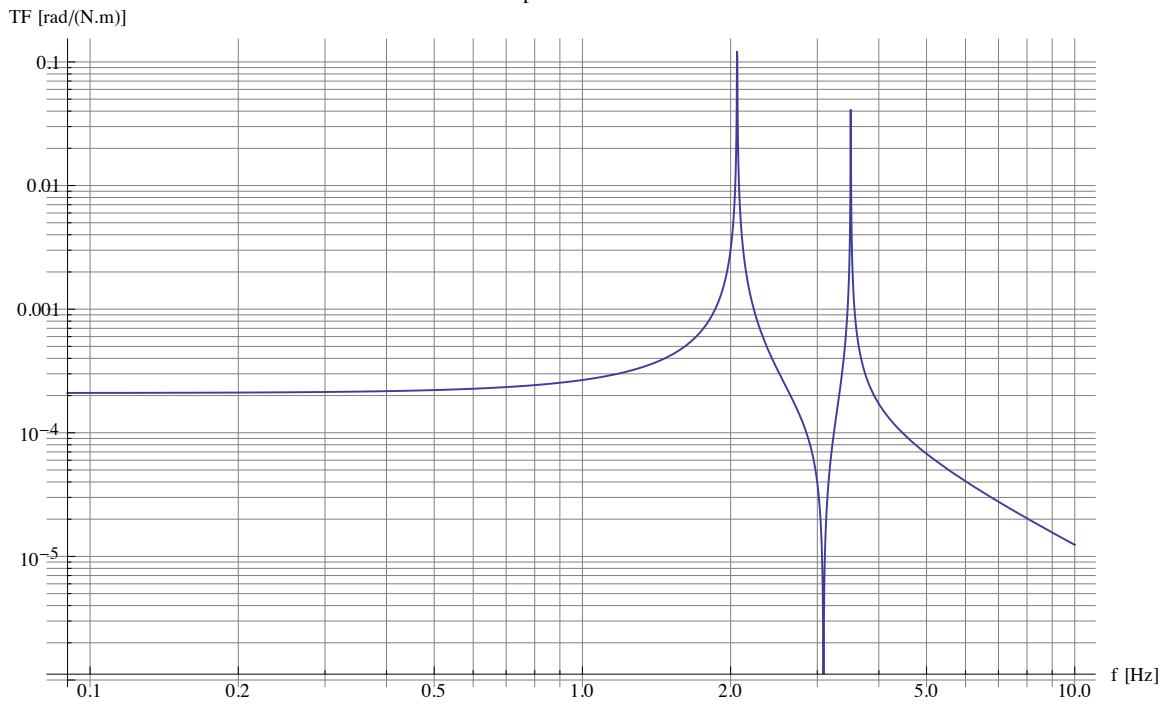
On 5/8/12, the CP chain of LHO ITMy had an anomalous transfer function with only two peaks (<https://alog.ligo-wa.caltech.edu/aLOG/index.php?callRep=2789>), at about 0.6 and 2.8 Hz.



A number of modified versions of the production model were produced to try to reproduce this. Since the bounce mode is invisible at the top and the normal number of modes is three, this suggests that one mass or set of blades has been immobilized.

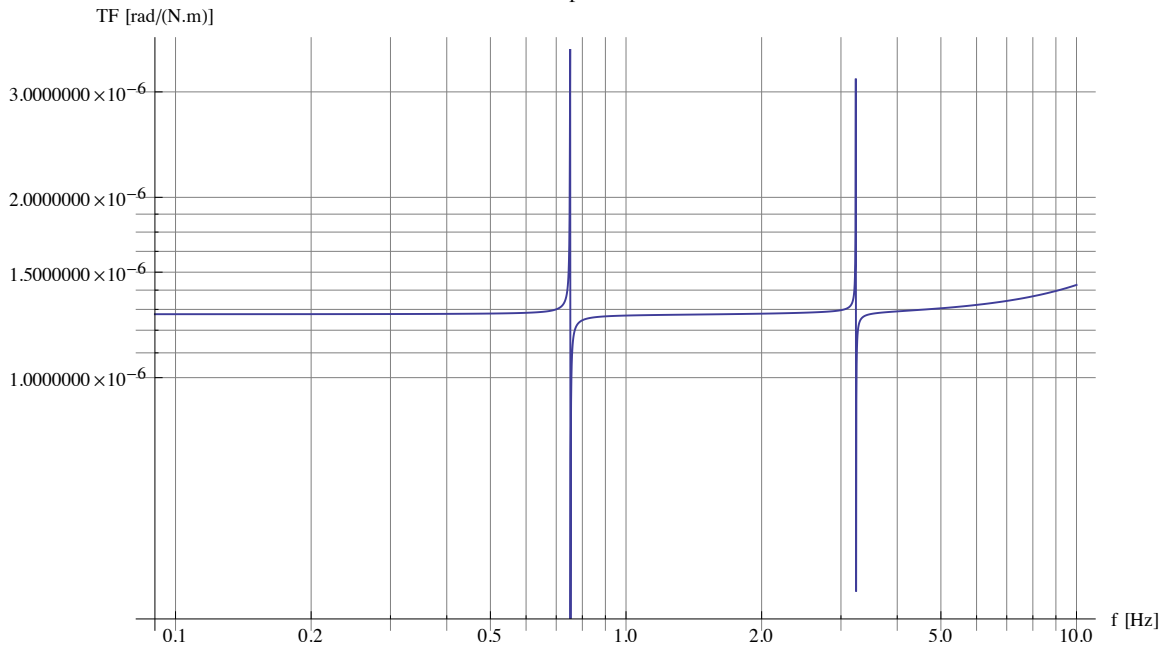
Immobilizing the penultimate mass gives frequencies that are too high:

CP chain, Top Mass V-V, Penultimate Mass Locked  
20111121TMproductionCPlockedPM

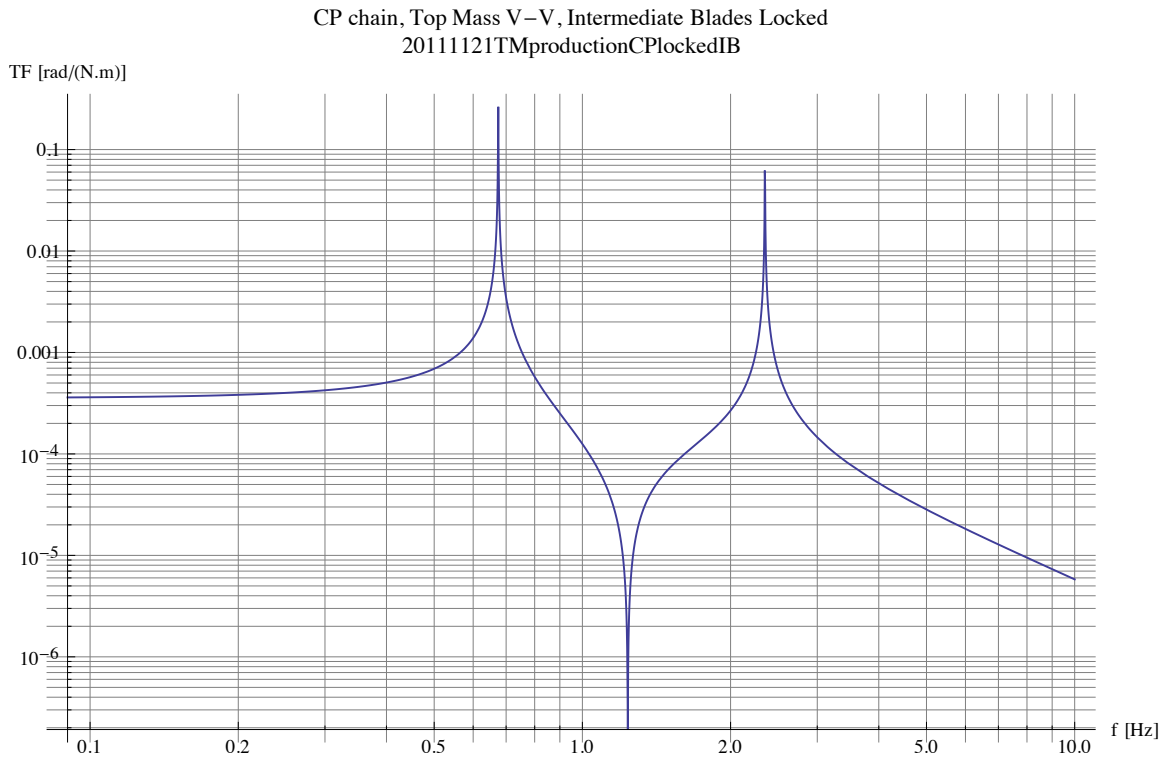


Immobilizing the top blades gives modes in the right ballpark for frequency, but much too small for amplitude (because the top mass is almost immobilized as well):

CP chain, Top Mass V-V, Top Blades Locked  
20111121TMproductionCPlockedTB



Immobilizing the intermediate blades (top mass blades) is promising:



But immobilizing the lower blades (UIM blades) is a near perfect fit:

