

***Status Update of  
aLIGO Lock Acquisition  
Simulation***

**Kiwamu Izumi  
(LIGO Hanford Observatory)**

LIGO-G1301162-v2

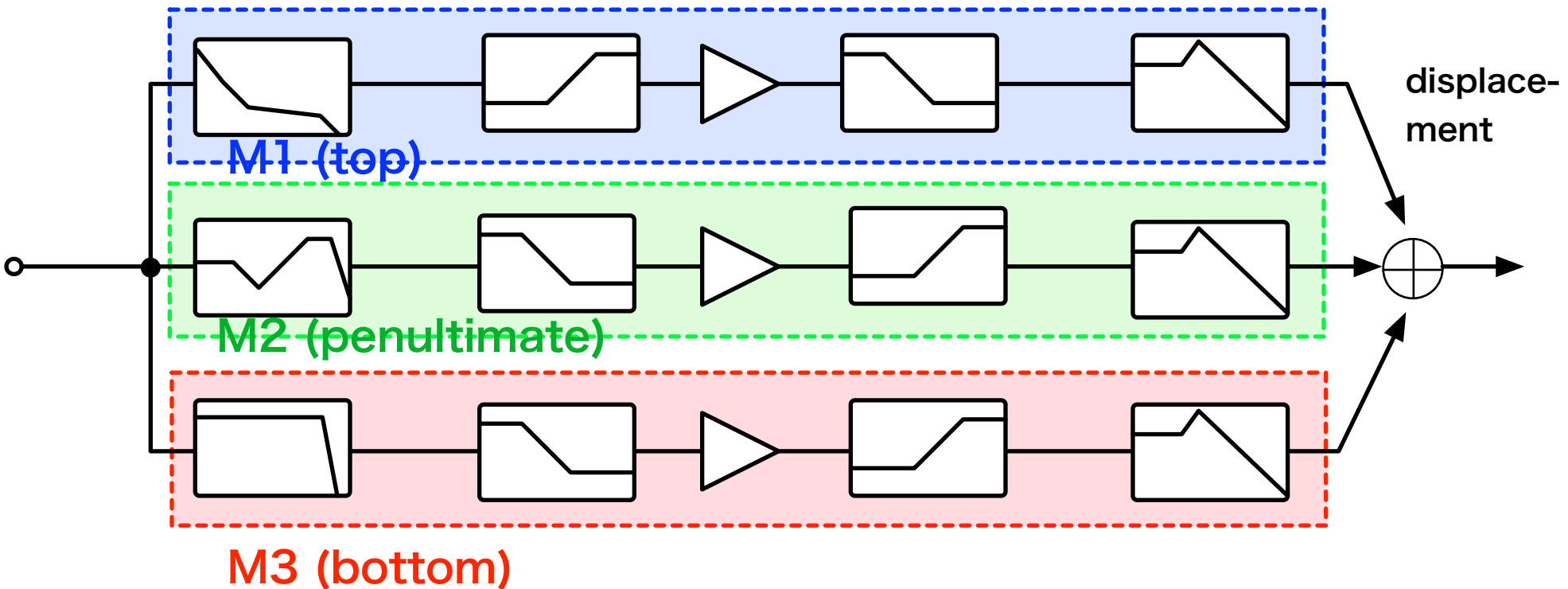
Simulation meeting Oct/18/2013

# Home Works

- Investigate why the SRM M2 stage keeps saturating.
  - My filter design was bad.
  - Noise from CARM and PRCL.
- Improve the SRM M2 saturation.
  - Changed the filter design.
  - Mod. depths increased to 0.2.
  - Now looks better.

# HAM Small Triple SUS (HSTS)

■ A simplified model is used



LOCK  
FILTER

anti-  
dewhiting

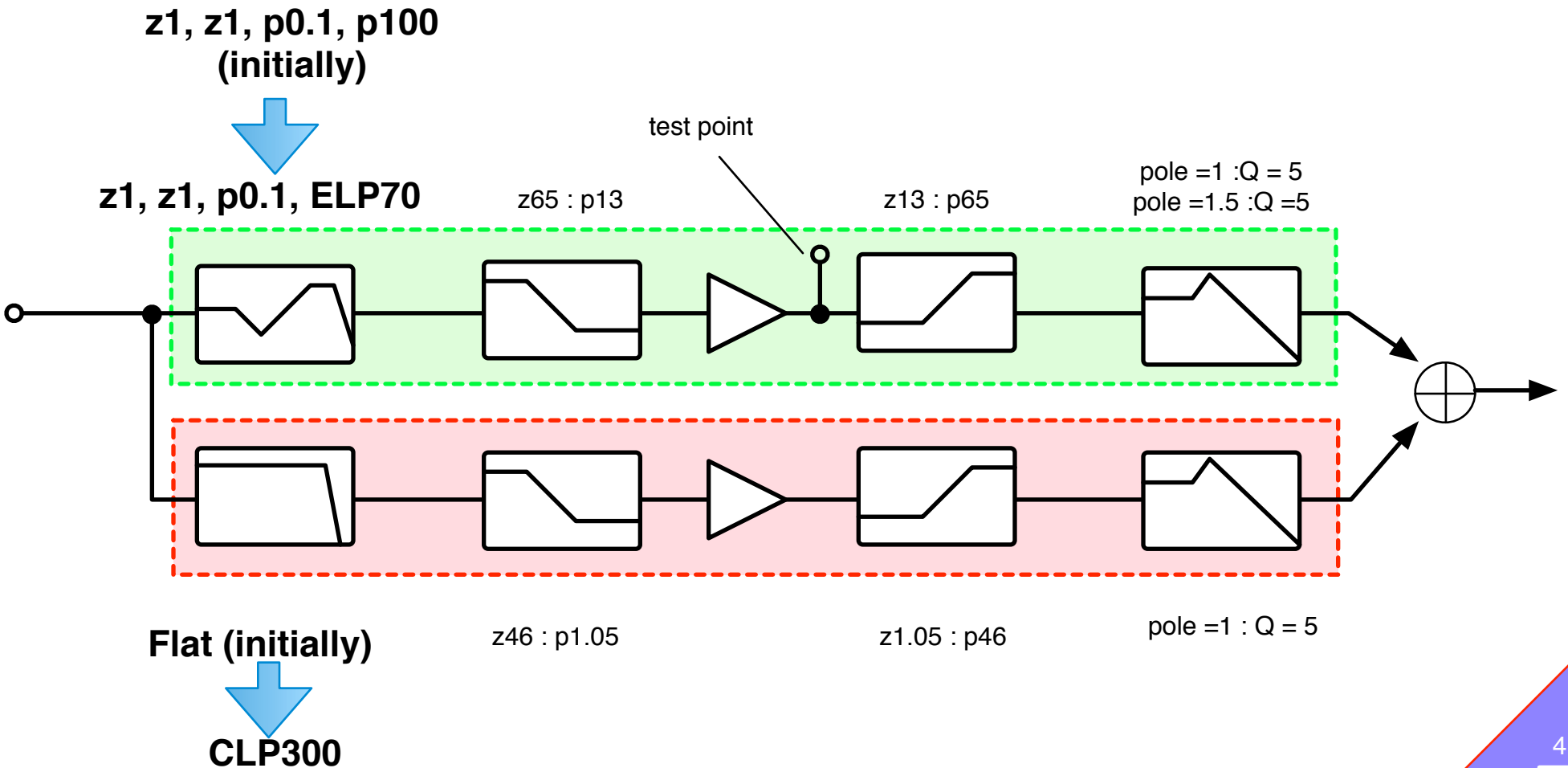
DAC

dewhiting  
(coil driver)

mechanical  
response

# Close look

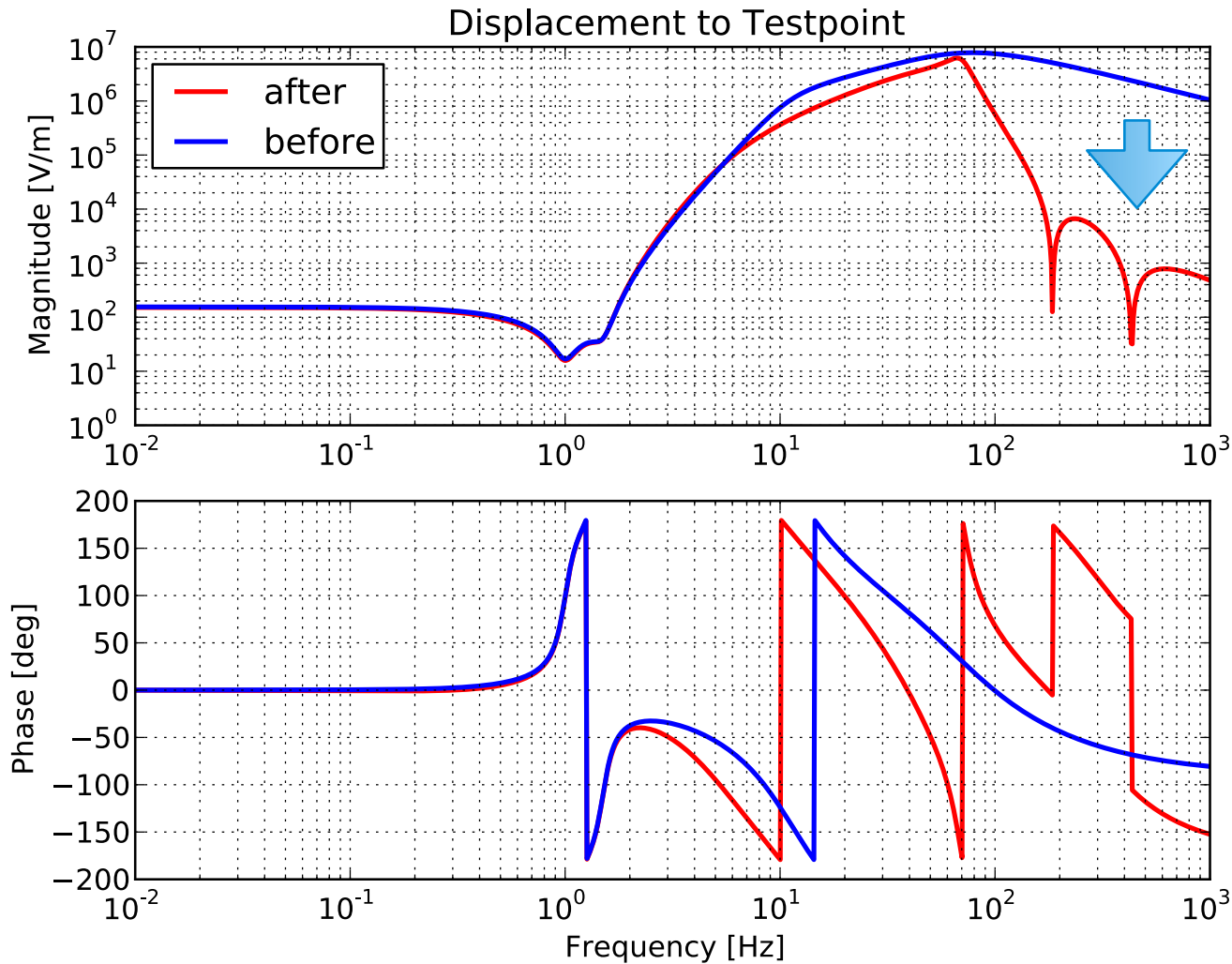
- M1 is not used.
- Dewhitenings are in the "acquisition" mode



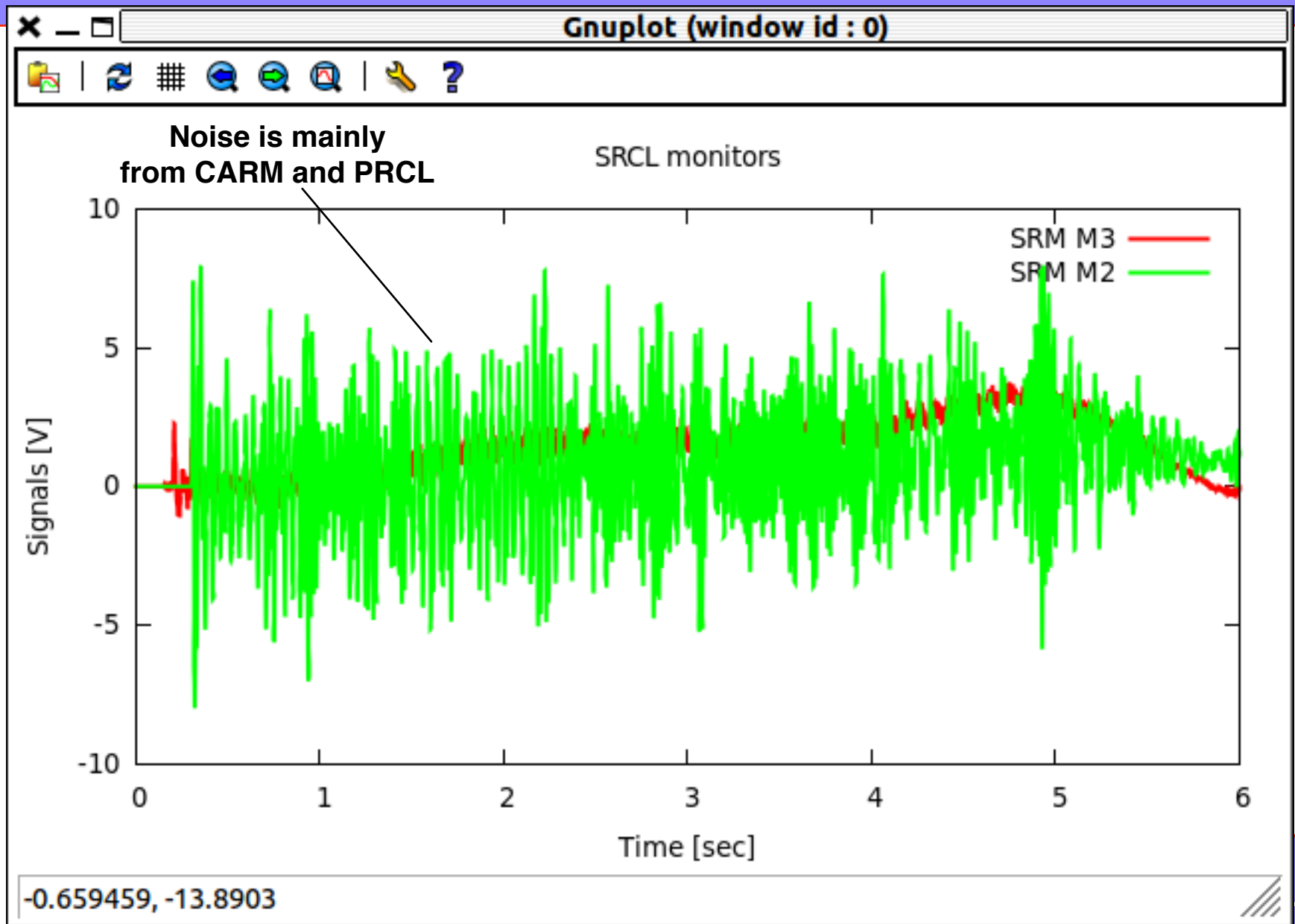
Also cross-over was reduced from 7 to 3-ish Hz

# Improvement

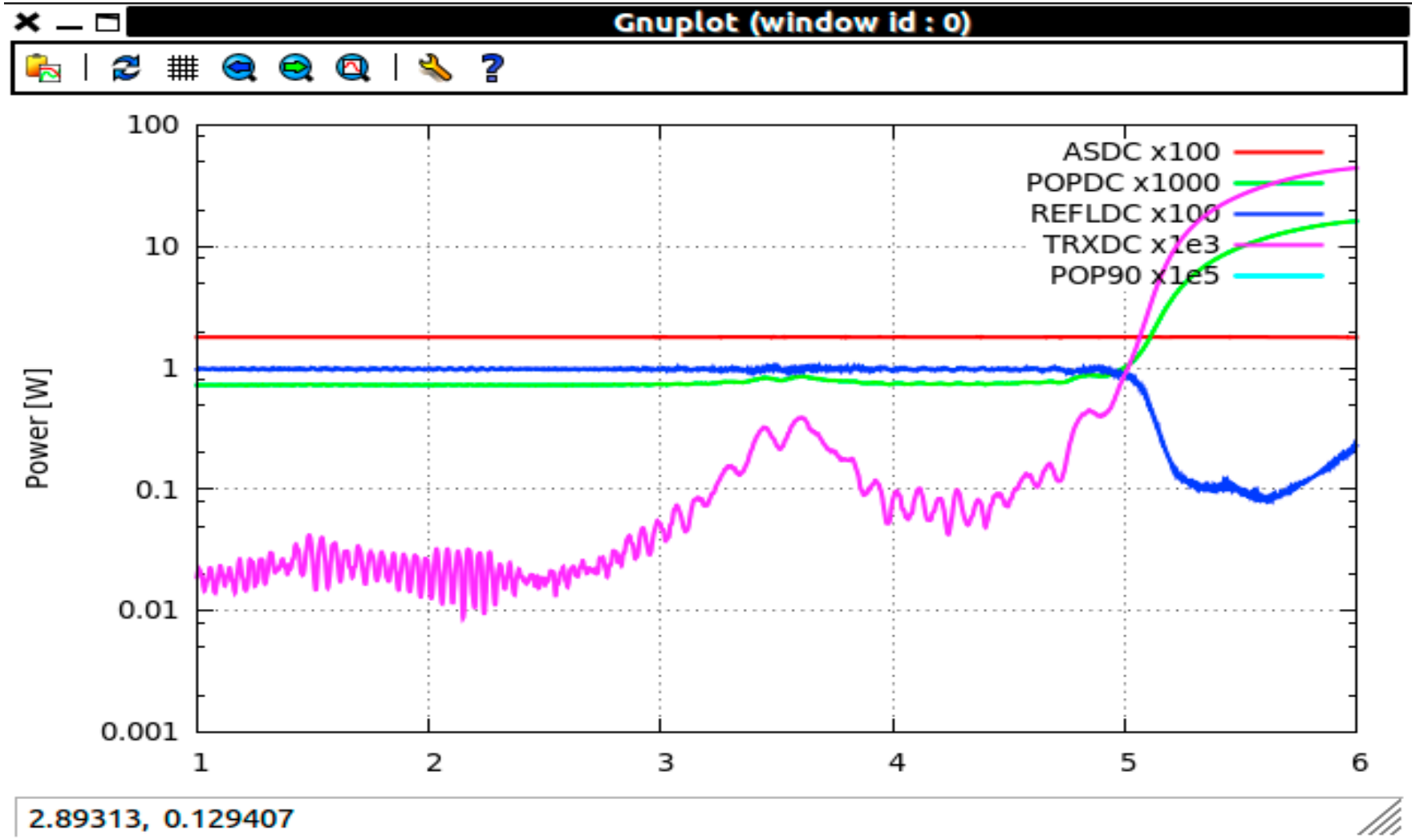
🔊 Noise at high freq. was reduced a lot



# Better



# Good.



# 3f - 1f ?

☛ Nic's subtraction idea was implemented.

=> The subtraction itself worked OK.

=> However SRCL is still kicked  
in a very similar way  
i.e. PDH signal type offset shows up.

Maybe PRCL coupling ??



