

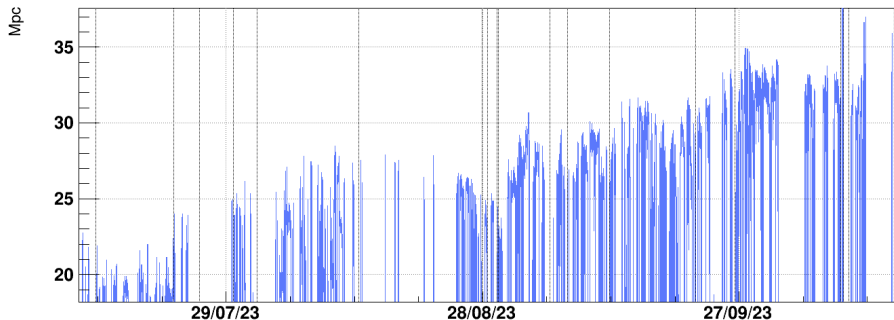
Update on Virgo status

Michal Was for commissioning team

LAPP/IN2P3 - Annecy

BNS range improvement over past 4 months

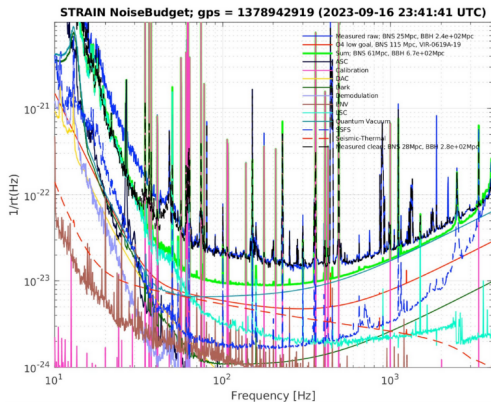
Hrec_Range_BNS__TIME



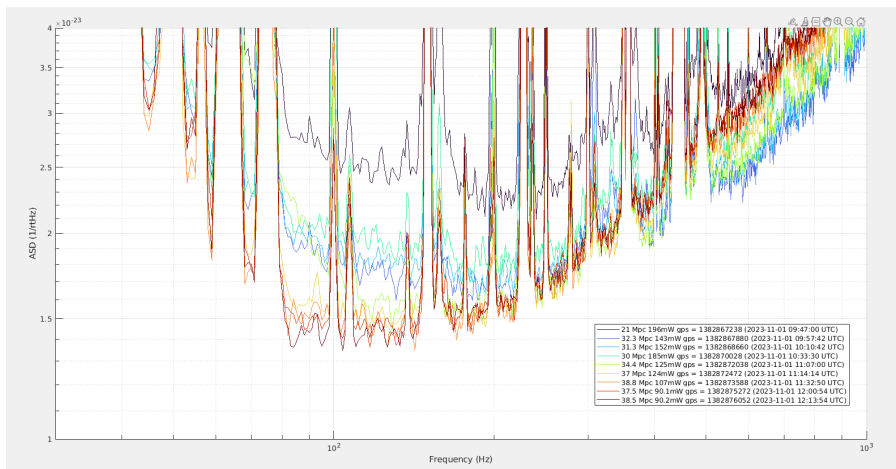
- Binary Neutron Star range
- Steady progress since repairing/replacing two mirrors

Improving noises that we do understand

- Known noise sources predict 60 Mpc
 - ▶ Was 30 Mpc in July
- Measured BNS range ~ 35 Mpc
- Low frequency (below 30 Hz)
 - ▶ well explained with control noise
- High frequency (above 1 kHz)
 - ▶ quantum noise
 - ▶ $\sim 5\%$ gap due to fluctuations
- Large gap between 80 Hz and 300 Hz
 - ▶ Unmodeled noise with $1/\sqrt{f}$ shape

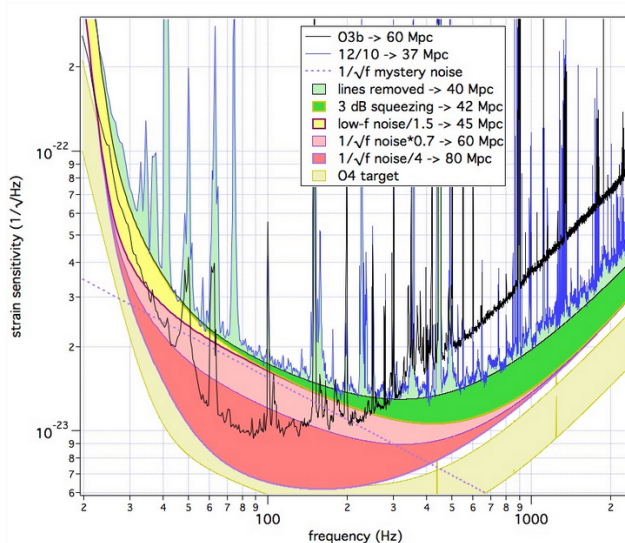


Hope - found a way to change level of this noise



- Making interferometer worse makes the sensitivity better
- Gives hope that we can understand and solve the problem

A path towards 60 Mpc BNS range



- Reduce the contribution of $1/\sqrt{f}$ mystery noise
- Enable squeezing for improvement at high frequency
- Continue work with low-frequency control noise improvements