Update on Virgo status

Michal Was for commissioning team

LAPP/IN2P3 - Annecy
BNS range improvement over past 4 months

- 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 \( \sim 35 \) 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