Status of Virgo

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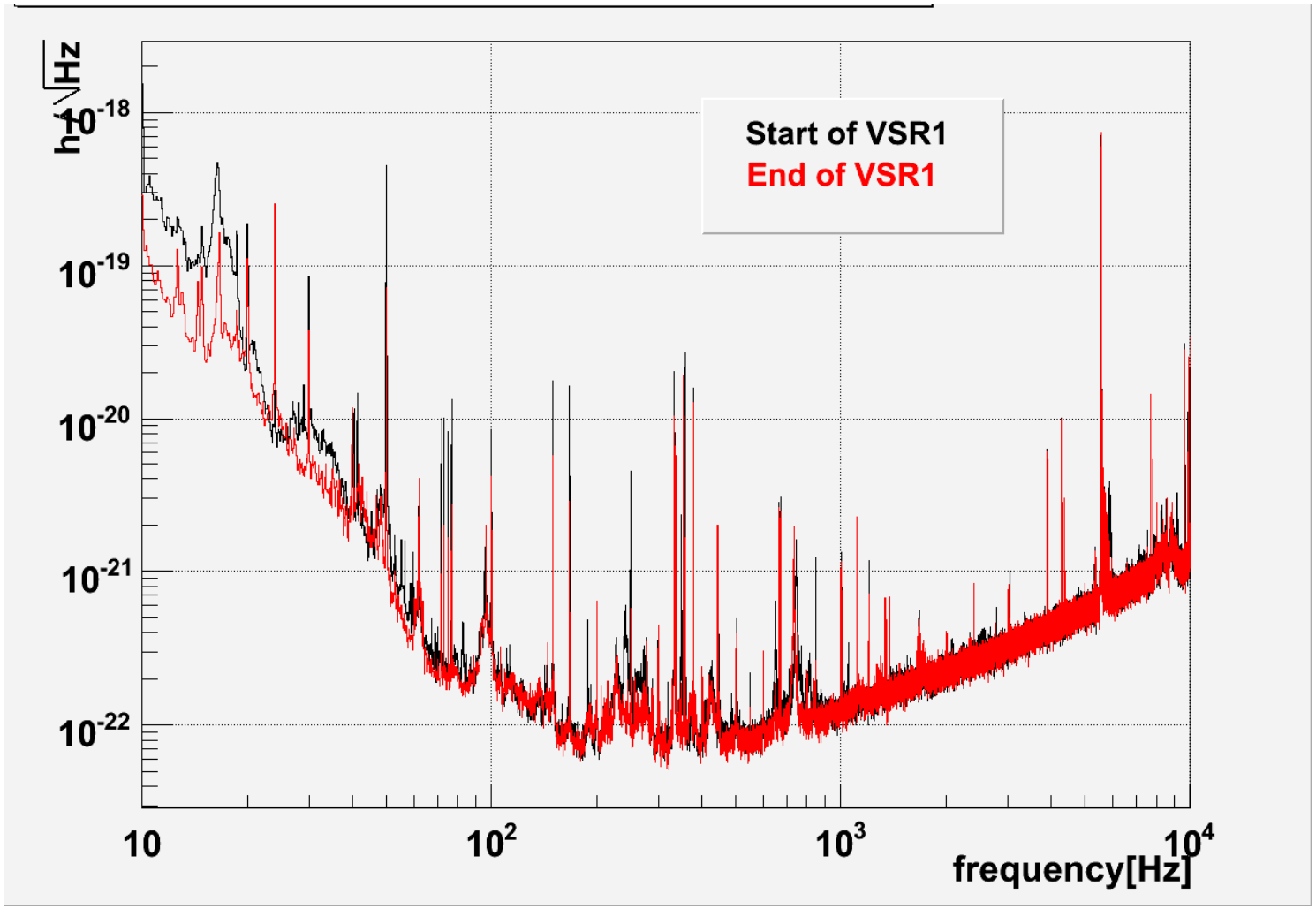
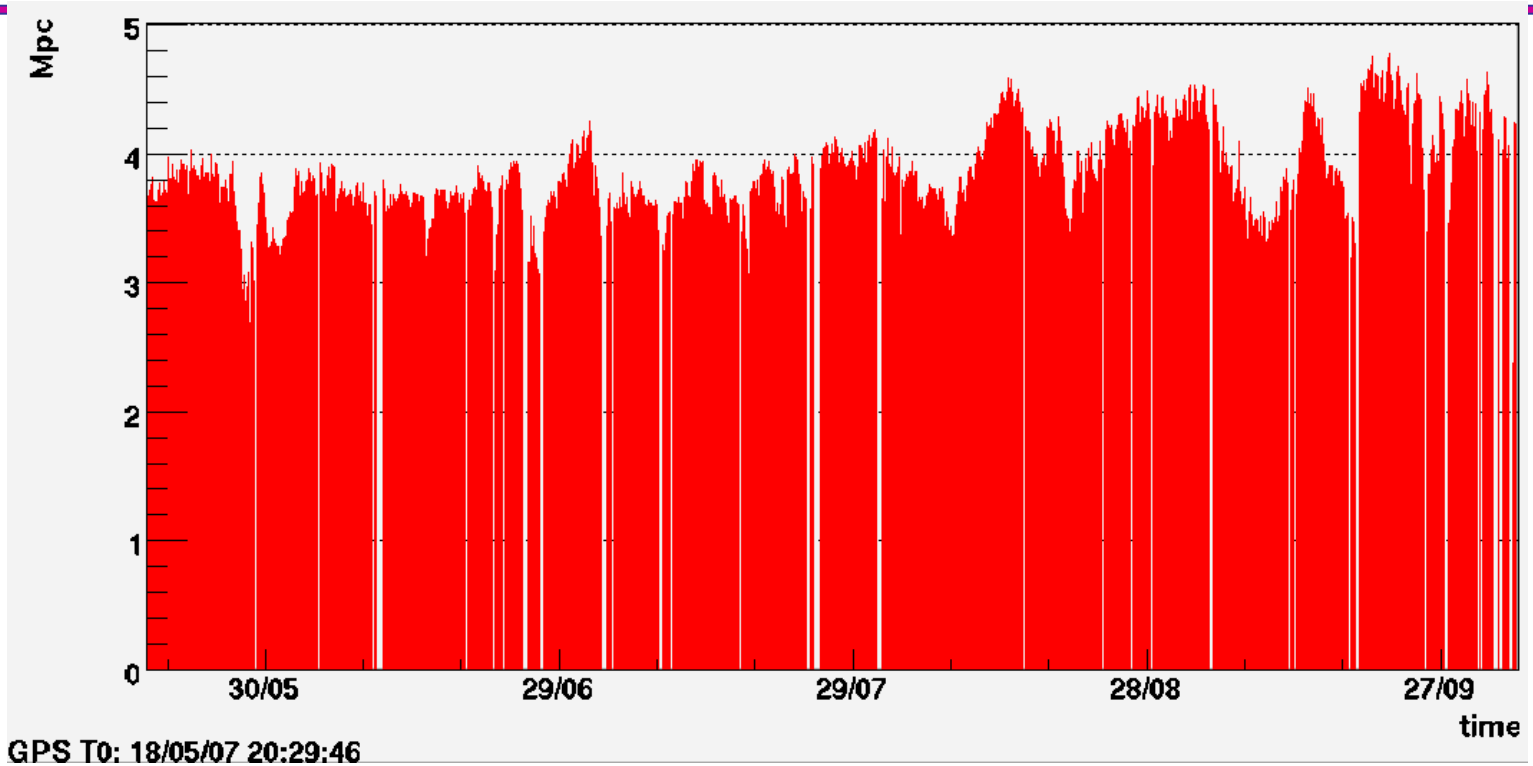
Virgo Sensitivity Evolution during VSR1



Progress in the sensitivity during the run...

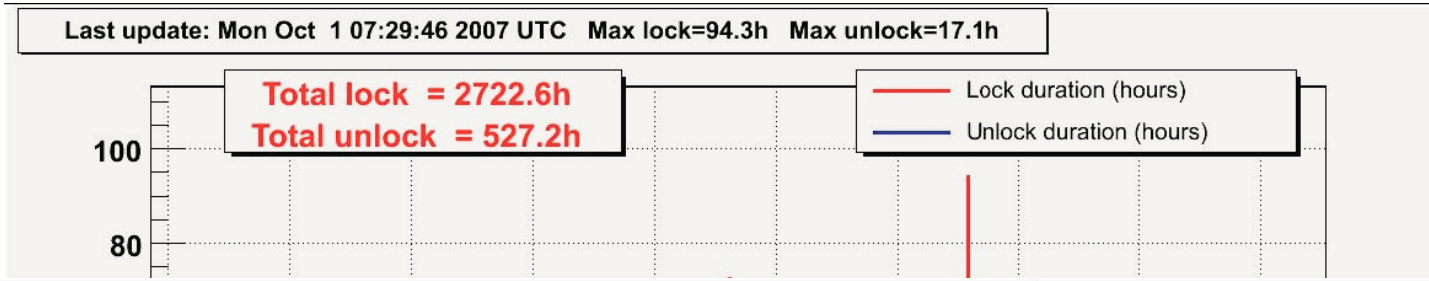
Effect on the BNS horizon

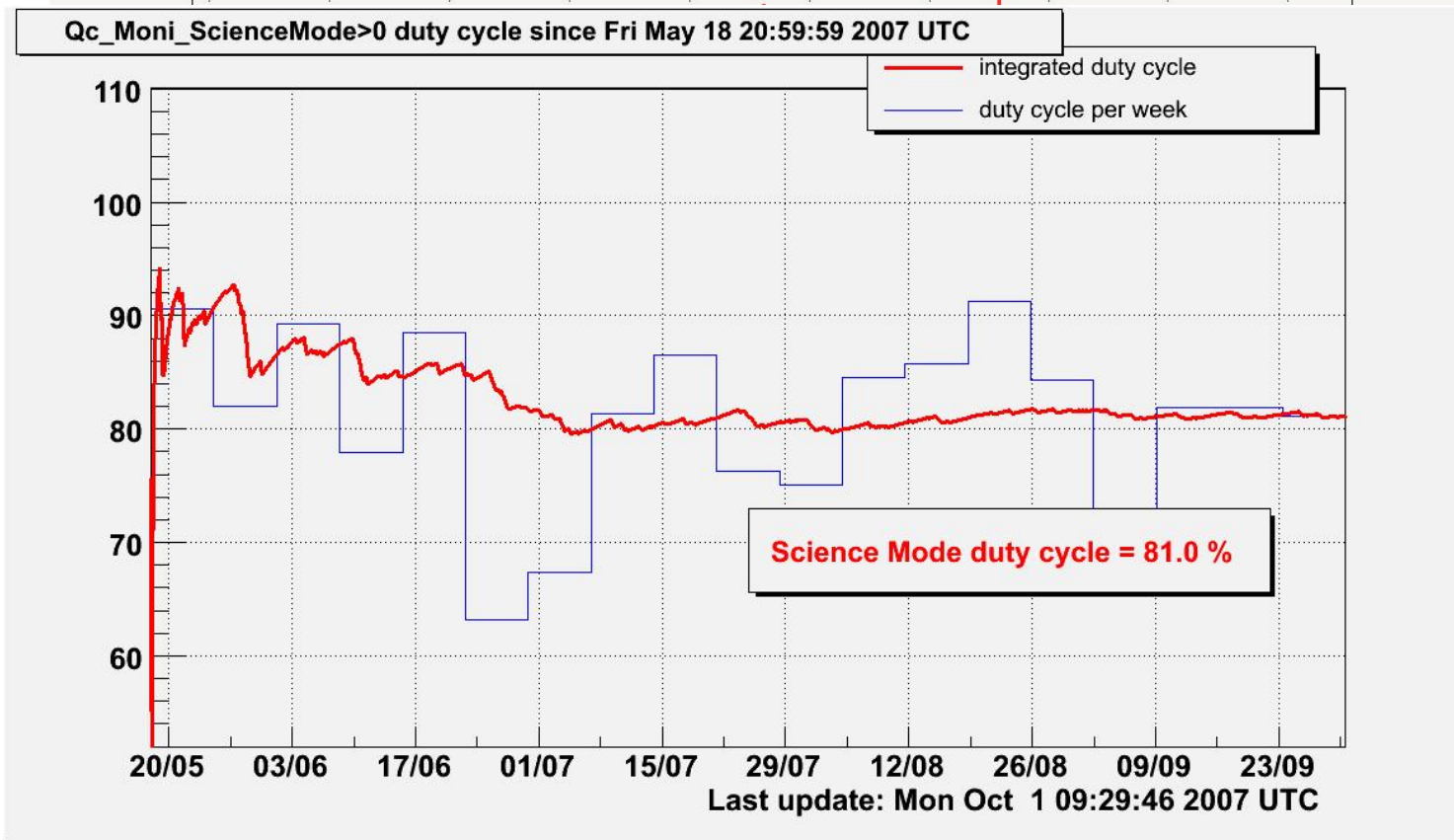


- Significant improvement coming from noise mitigation in 50-1000Hz band
  - Due mostly to actuator noise reduction, magnetic coupling mitigation and work on supposedly acoustic noise sources, during the weekly commissioning breaks
- Horizon at the end of the run frequently up about 4.5 Mpc
  - ◆ Even somewhat better (dream horizon) when an electrical cut turned off some acoustic noise sources: work underway to identify the precise culprits
- More improvement is believed possible with more commissioning work

VSR1 locked segments & duty cycle

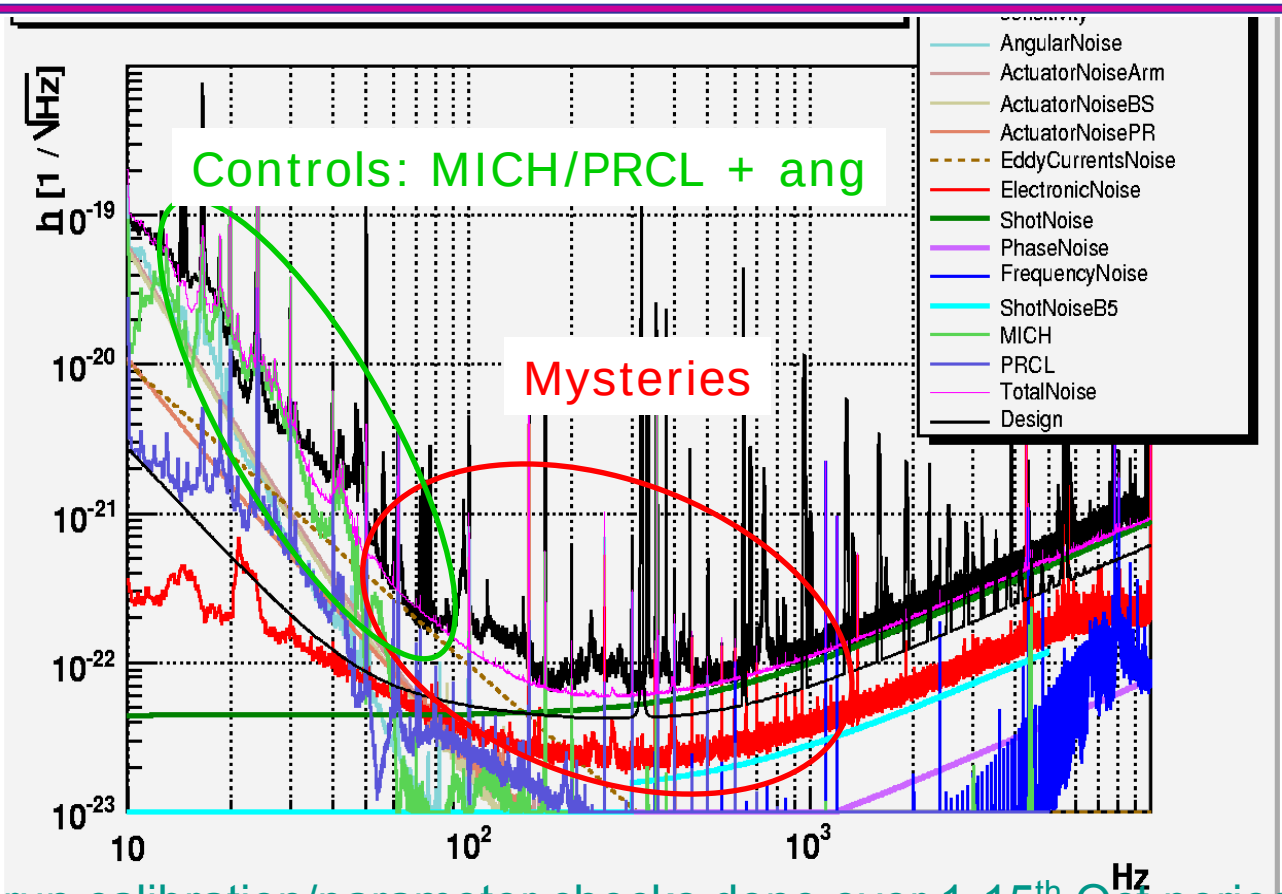
Good fraction of long lock periods





Science mode = 81%
(locked mode 84%)

Commissioning is restarting



- Post-run calibration/parameter checks done over 1-15th Oct period
- Now attack control and “mystery” noises
  - Priority to fix problems that would stay with us in Virgo+
  - Install as soon as available the thermal compensation system
- More details in Edwige's Tournefier talk, Tuesday afternoon

From VSR1 to Virgo+

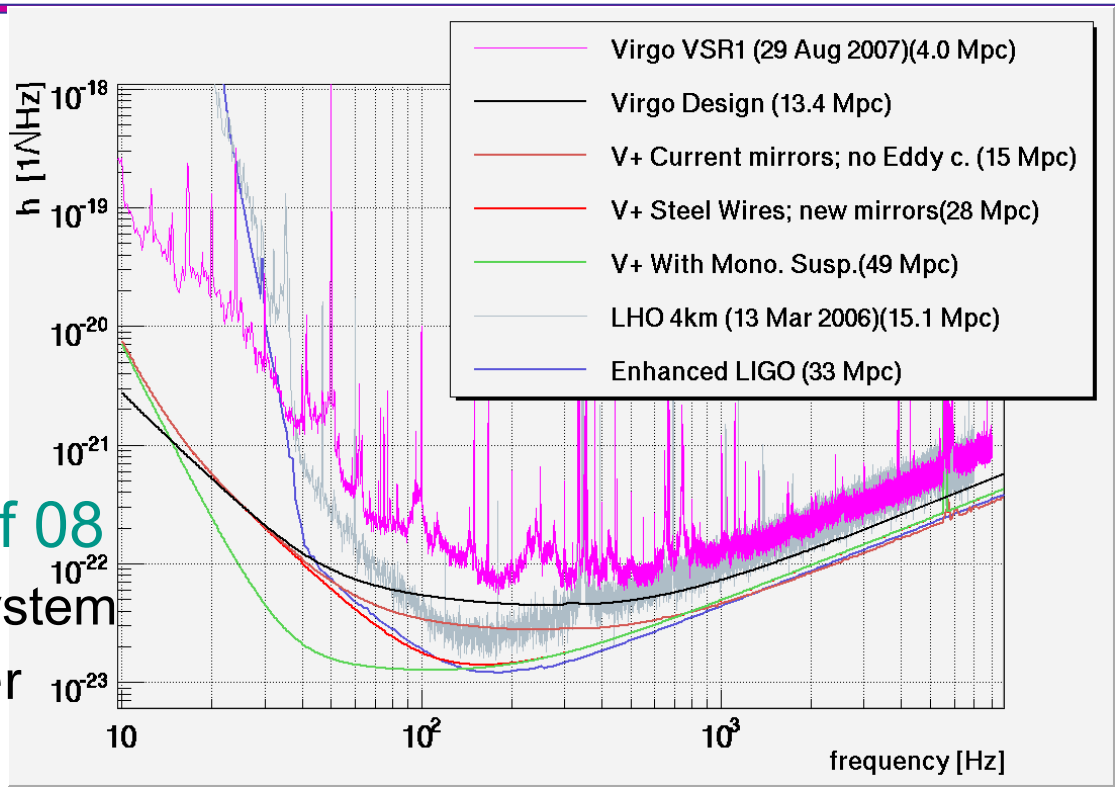
- Target

  Virgo+ online at the same time of eLIGO (i.e. mid-2009) with a sensitivity useful for joint analysis

- Post VSR1/spring 2008:
  - Commissioning activity at low and intermediate frequency
- mid 2008
  - Install the selected parts of the Virgo+ upgrade in a few bunches
- 2009
  - Global commissioning
  - Start the second Virgo Science Run (VSR2) around mid 2009
- 2010+
  - Possibly interrupt the run for including V+ elements not introduced in first place and which can retire risk from Advanced Virgo
  - Keep running until ready for AdV installation in time to join Advanced LIGO

Virgo+ definition

- 2nd Virgo+ review held on Oct. 16-17
- Most modifications in good shape
- To be installed first half of 08
  - Thermal Compensation System
  - Increase of the laser power
  - New electronic



- Monolithic suspension sounds too late for the start of VSR2
  - Considering to start with the existing mirror/suspension
  - Keep developing the Mon. suspension for installation during V+
  - Suspension with steel wires is a backup option
- **More information in Michele Punturo's talk, afternoon today**

Data taking during Virgo+ preparation

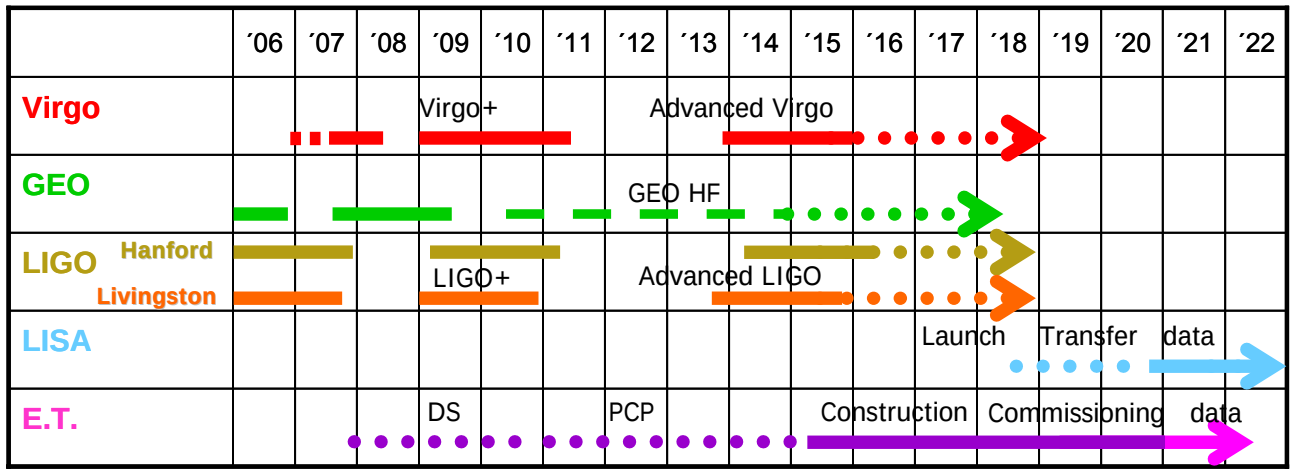
- Keep the priority for detector improvement and commissioning.
  - Perform short commissioning runs to assess the detector, though
- Take each opportunity to collect data in “astrowatch” mode.
  - Unattended night shifts, unattended week-ends *when possible*
  - The length of the short data taking not driven by the data analysis needs
  - All science mode data can be kept for reanalysis
    - For externally triggered searches
    - For CW analysis if deemed interesting by the CW search group
- The DA council may want to review the consequences of these plans
  - Very concrete questions like
    - Do we share automatically science mode data, if any, during V+/eLIGO preparation?
    - Or do we exchange only data around interesting ext/triggers?

Advanced Virgo

- Goal
  - Sensitivity 10 times beyond Virgo design
  - Back online at 2013-2014 horizon
- Main foreseen changes
  - Higher laser power
  - Signal recycling
  - Heavier mirrors
  - Better coatings
  - Beam geometry
- Major progress recently
  - Advanced Virgo Conceptual Design being released
    - » What goes in AdV and why
  - First “cost estimate and project execution plan” (PEP) being released
  - Documents to be reviewed by funding institutions this November
- More details in Giovanni Losurdo's talk this afternoon

Other news

- Collaboration composition
  - » The Padova/Trento group has joined the Virgo Collaboration
- EGO Council approved funds for post-doctoral fellows dedicated to DA
  - 6 two-year position reinforcing Virgo labs involved in DA (2 Burst, CBC: 1 CW, SB)
- The Einstein Telescope (E.T.) Design Study proposal negotiated!
  - Joint European proposal (GEO + Virgo)
  - Underground, 30km beam pipe, Advanced suspension, Low thermal noise…
  - 3.0 M€ from European Union over 3 years. **Contract signed in the coming days**



DS: Design Study, PCP: Preparatory Construction Phase