



Virgo Status

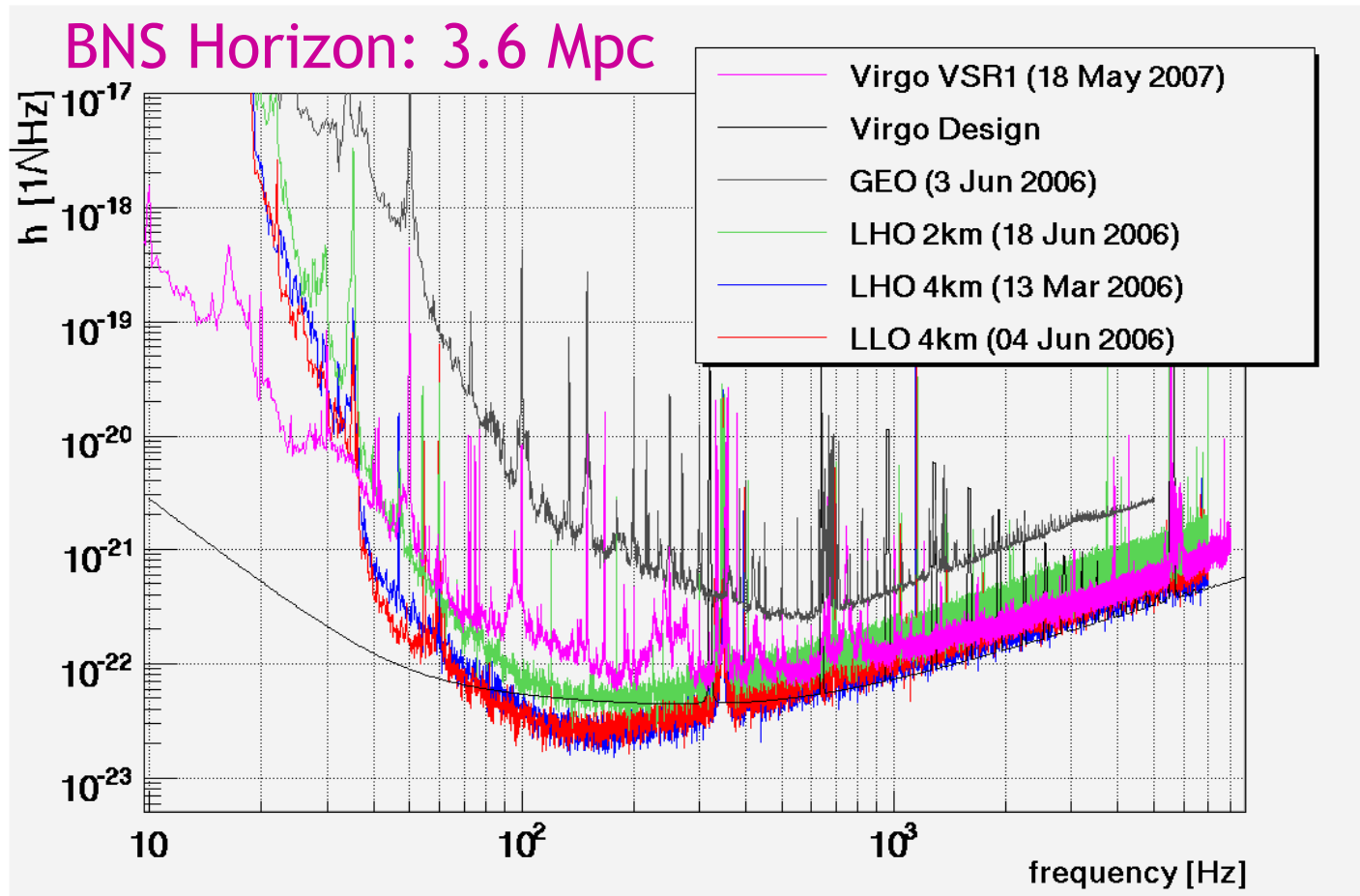
B. Mours

LIGO-G070531-00-Z





Virgo Sensitivity

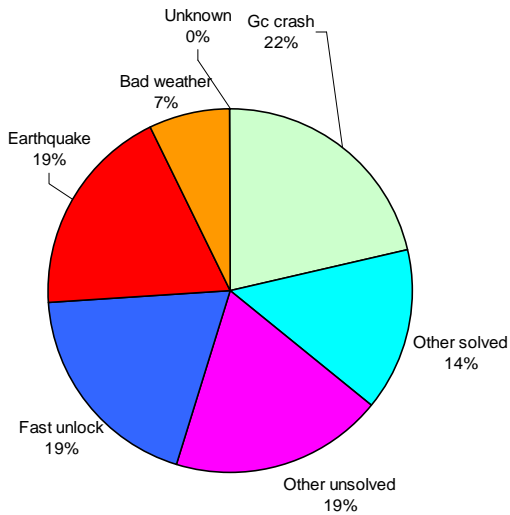


Virgo Science Run 1 (VSR1) started on May 18th

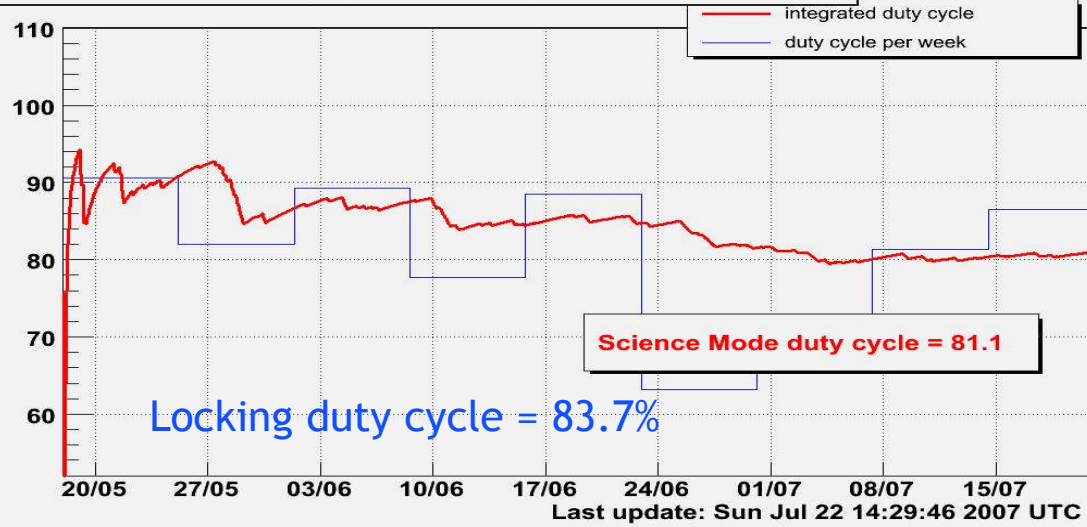


VSR1 duty cycle

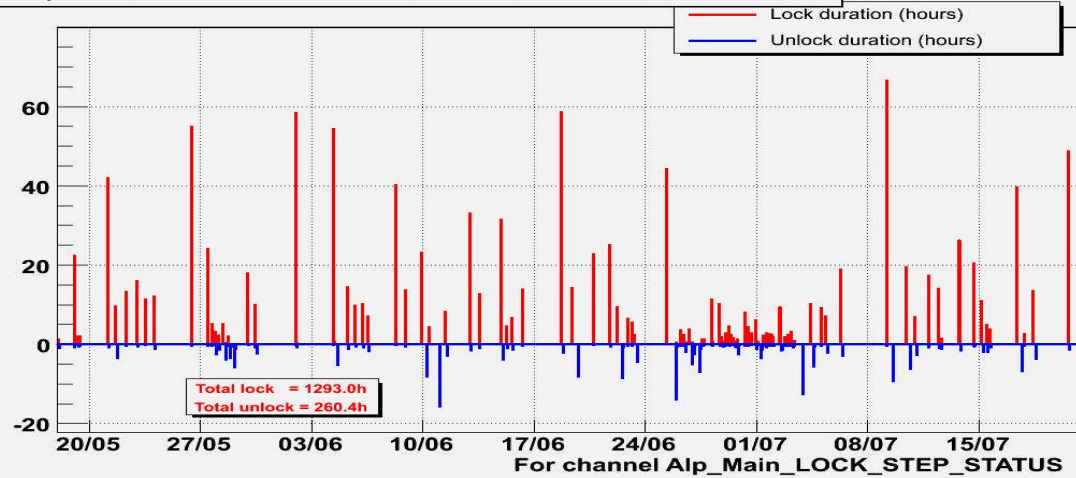
First month Unlocks from science mode



Qc_Moni_ScienceMode>0 duty cycle since Fri May 18 20:59:59 2007 UTC

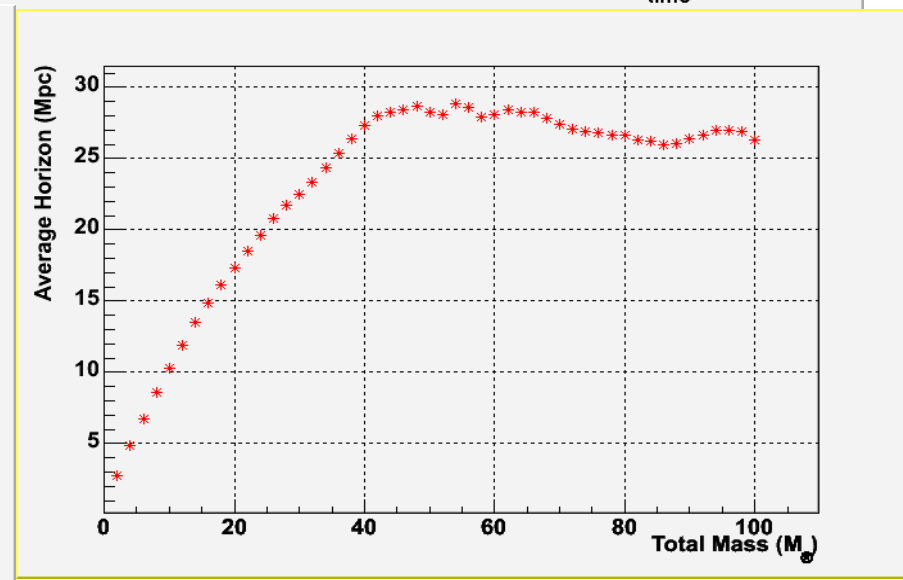
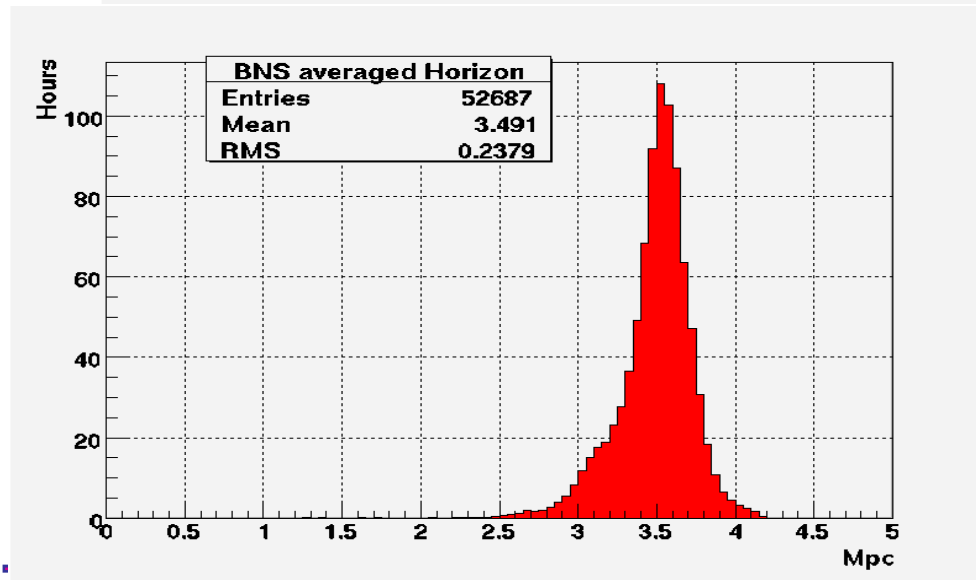
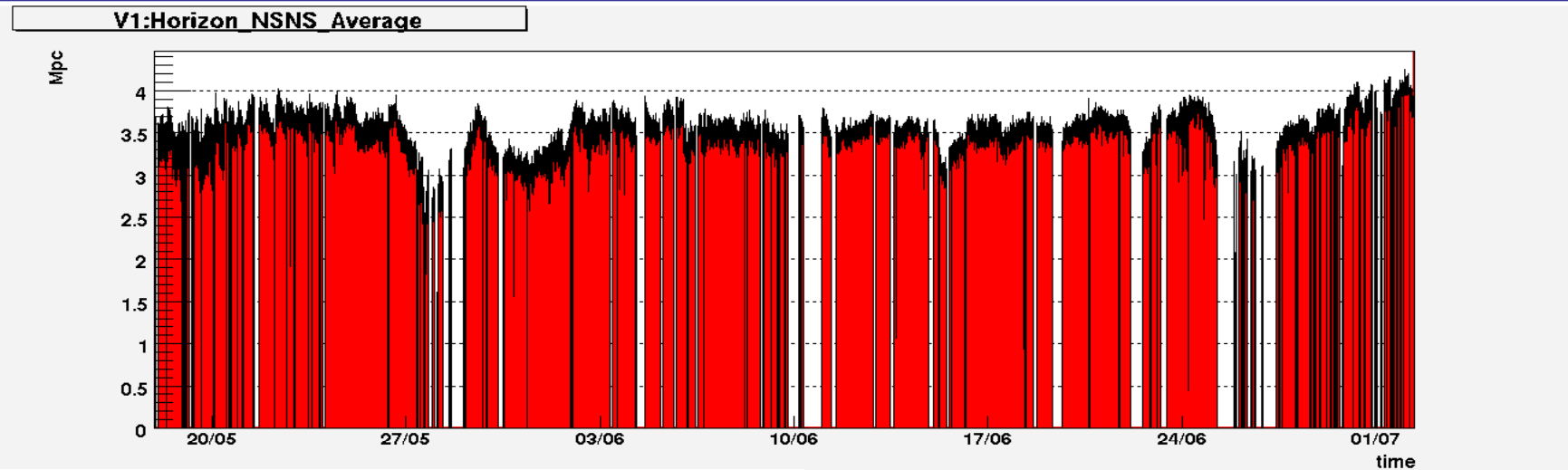


Last update: Sun Jul 22 14:29:46 2007 UTC Max lock=66.6h Max unlock=15.9h





VSR1 horizon for inspiral sources

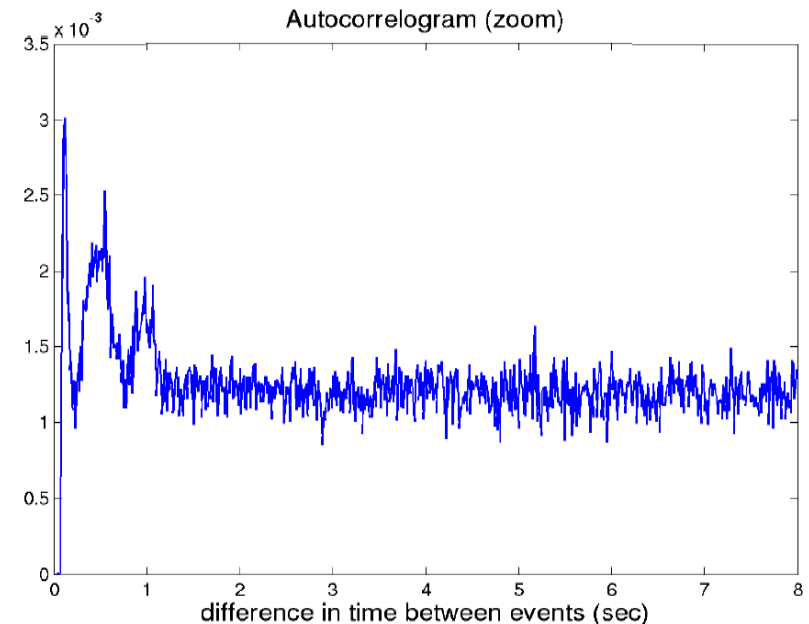
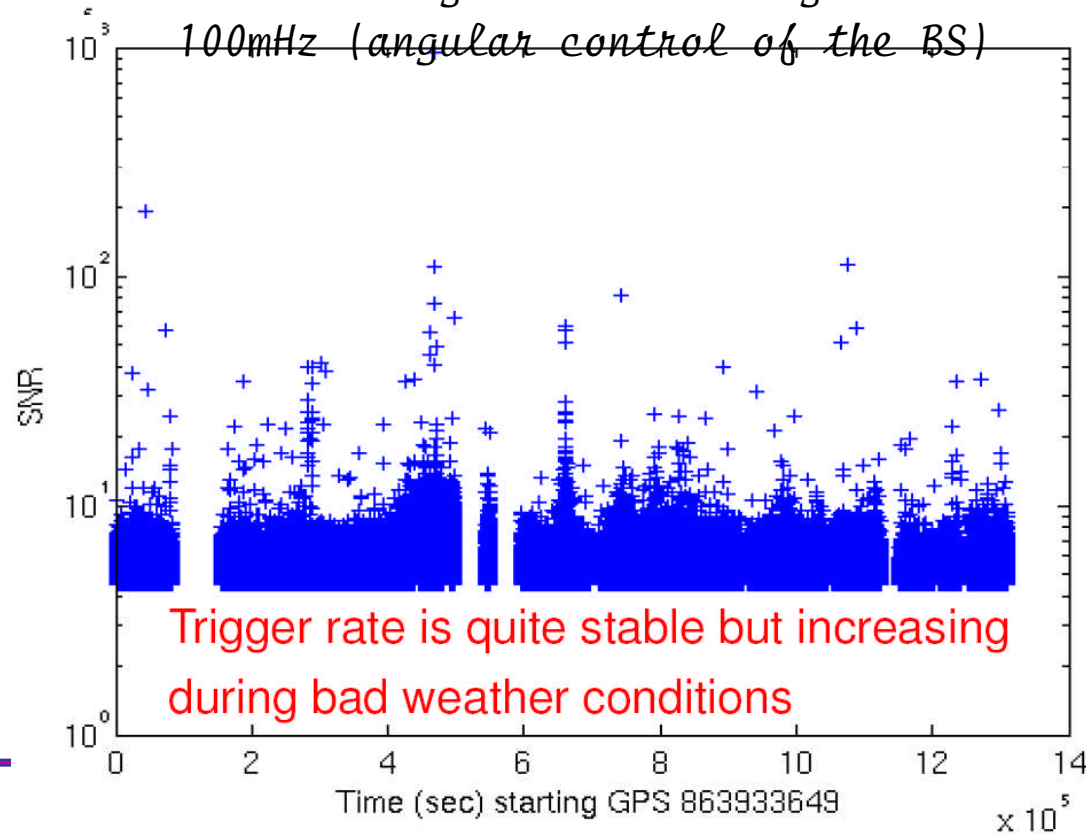




Bursts: first looks at first month of VSR1

- Peak correlator analysis of the first month of run

- ◆ Reasonable distribution with some tails, decaying rapidly.
- ◆ Trigger rate about 0.13 Hz @ SNR 5 (no DQ applied), rather stable.
- ◆ Autocorrelogram was showing structures at 0.6Hz (suspension) and 100mHz (angular control of the BS)

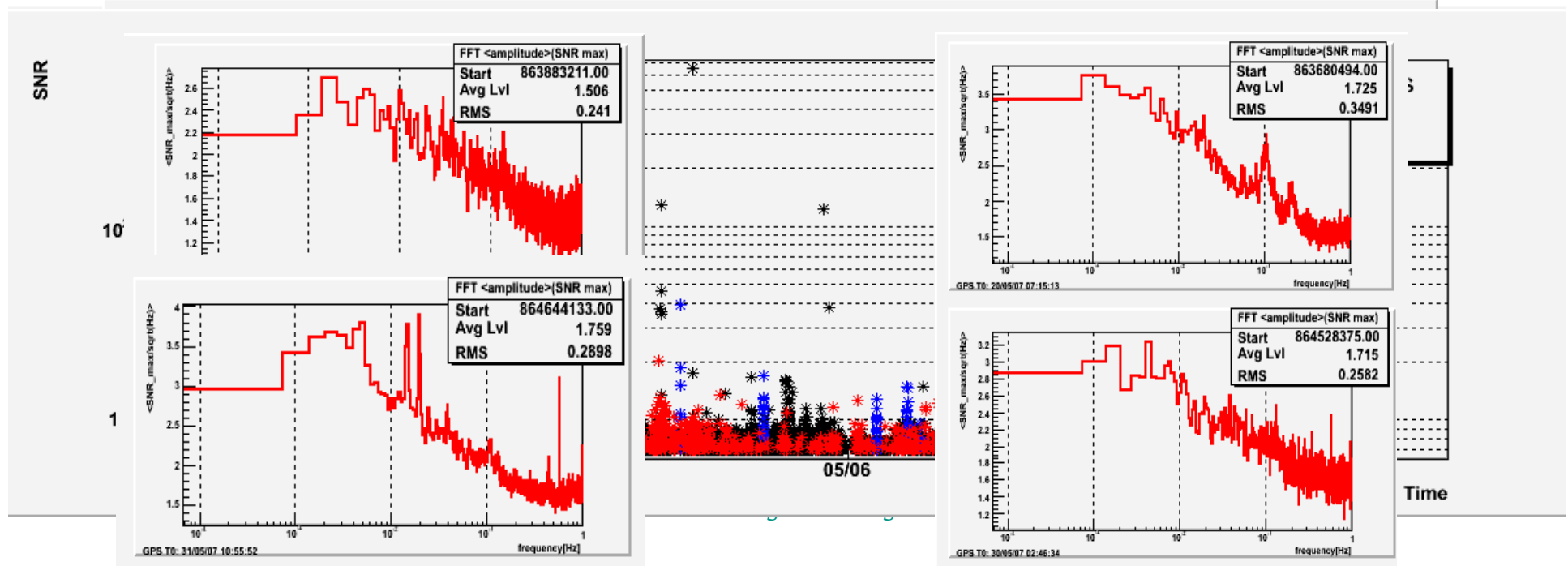




Inspiral: first look at first month of VSR1

- BNS search [0.9 - 3] M

- ◆ Reprocessed data (beginning) + online analysis
- ◆ Raw trigger distributions and fluctuations appear better than during WSRs
- ◆ Commissioning people identified the origin of some of the loudest events
- ◆ First tests with vetoes appear promising.
- ◆ For most of the time, no particular spectral features in the SNR time series





From VSR1 to Virgo+

- *Target:*

Virgo+ online at the same time of eLIGO (i.e. mid-2009) with a sensitivity as good as the one of eLIGO.

- *Post VSR1/fall 2007:*

- ◆ *Several months of commissioning (low and mid frequency)*

- *2008*

- ◆ *Install the different part of the Virgo+ upgrade in a few bunches*

- *2009*

- ◆ *Global commissioning*

- ◆ *Start the second Virgo Science Run (VSR2) around mid 2009*

Our priority is to complete the Virgo+ installation in due time



Virgo+ definition

- The exact Virgo+ definition, is still under discussion
- Goal: provide a sensitivity (inspiral horizon) at least as good as eLIGO,

- ◆ better than the Virgo design by a factor 2.

- Virgo+ baseline

- ◆ Increase of the laser power.

- ◆ Thermal Compensation System

- ◆ New mirrors, higher finesse

- ◆ New reference mass

- ◆ New electronic

- ◆ Monolithic suspension (?)

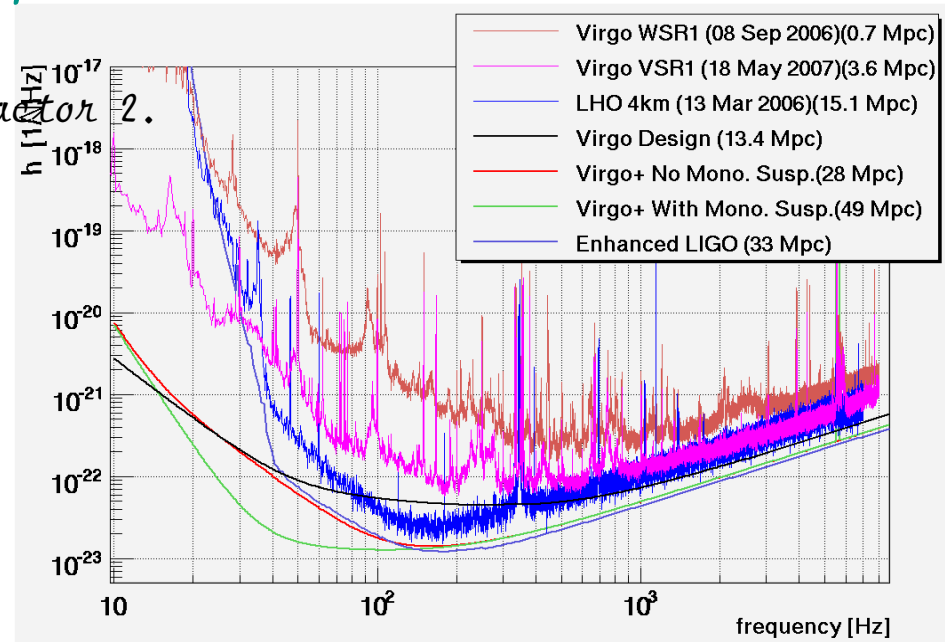
- » Very challenging

- » Science interest

- » Prepare the Advanced version of the detector

- Last April: first review of the Virgo+ proposed upgrades.

- Next fall: second review



- ◆ Select the options and adjust our planning.

Jul 23, 2007

LSC-Virgo meeting



Data taking during Virgo+ preparation

We believe that the best strategy to increase our chance to observe an event is to move as soon as possible to Virgo+.

- *Keep the priority for detector improvement and commissioning.*
- *Take each opportunity to collect data in "astrowatch" mode.*
 - ◆ *The length of these short data taking will not be driven by the data analysis needs*
- *This Strategy was presented during the July EGO council meeting*
 - ◆ *No request to change it.*



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 waist position*

*Suspensions already compliant
with advanced design*

- *Effort ramping up*

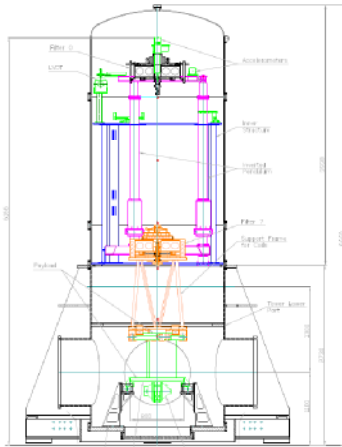
- ◆ *Priority put on commissioning and Virgo+*

- *Structure in place*

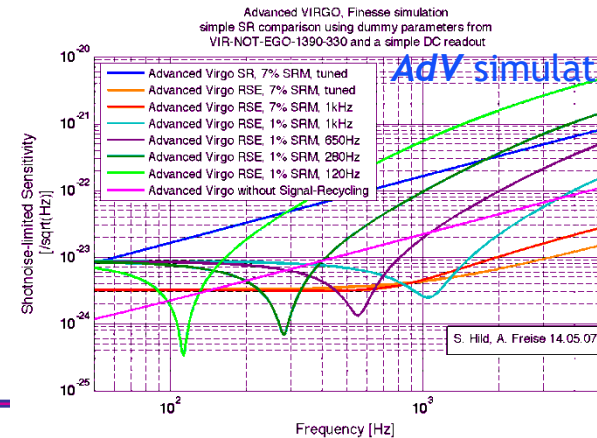
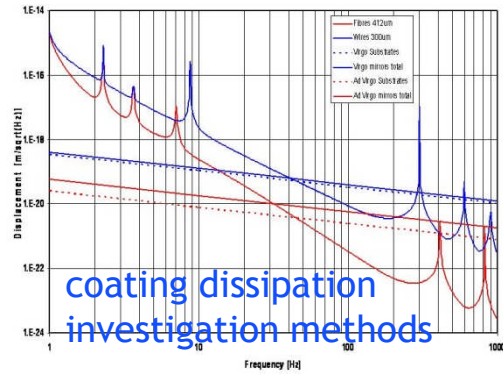
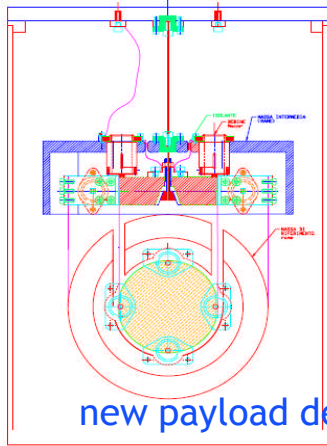
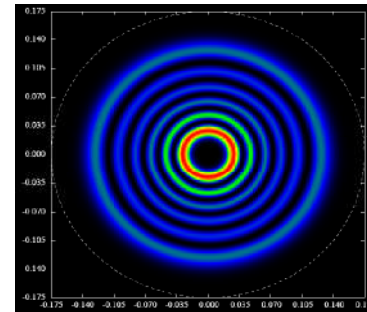
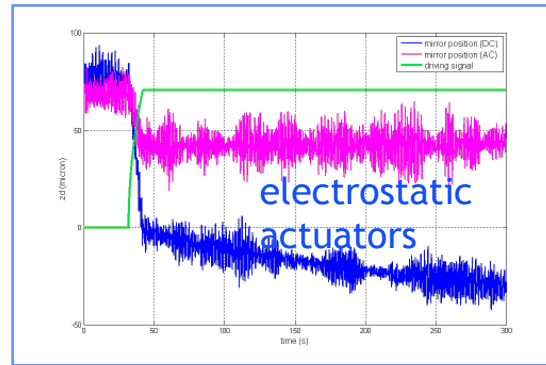
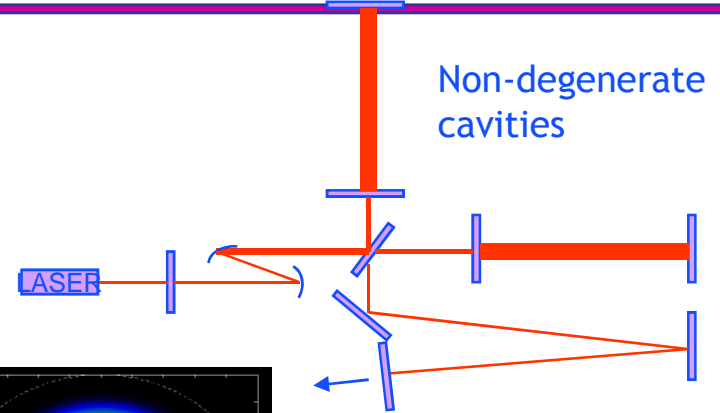
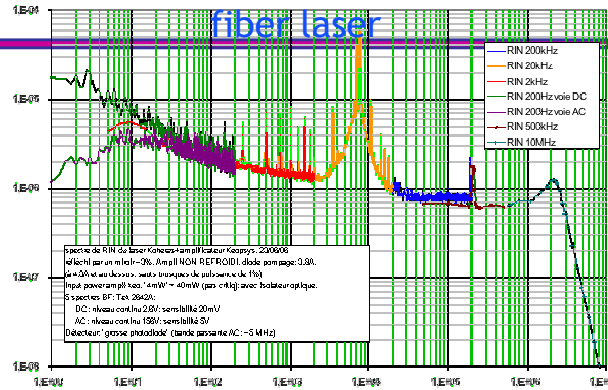
- ◆ *Working groups, coordinators*
- ◆ *Institutions expect first design and cost for the end of the year*



June 14th Adv Workshop -Some Topics



SA facility



Adv workshop
 June 14

Jul 23, 2007

LSC-Virgo meeting



Other news

- Collaboration composition

- ◆ INFN Genova has joined the Virgo collaboration
- ◆ Few people from INFN Padova-Trento asked to join the Virgo Collaboration
 - » G. Prodi + 3 persons. (part time)

- The Einstein Telescope (E.T.) Design Study proposal "almost" approved

- ◆ Joint European proposal (GEO + Virgo)
- ◆ Underground, 30km beam pipe, Advanced suspension, Low thermal noise...
- ◆ 3.6 MEuros (?) from E.U. over 9 years

