Virgo Short term planning
For the EGO Council
February 26th 2007

1 Introduction

This short document presents the current sensitivity and summarized the Virgo plans for the next 6 months.

2 Recent progress

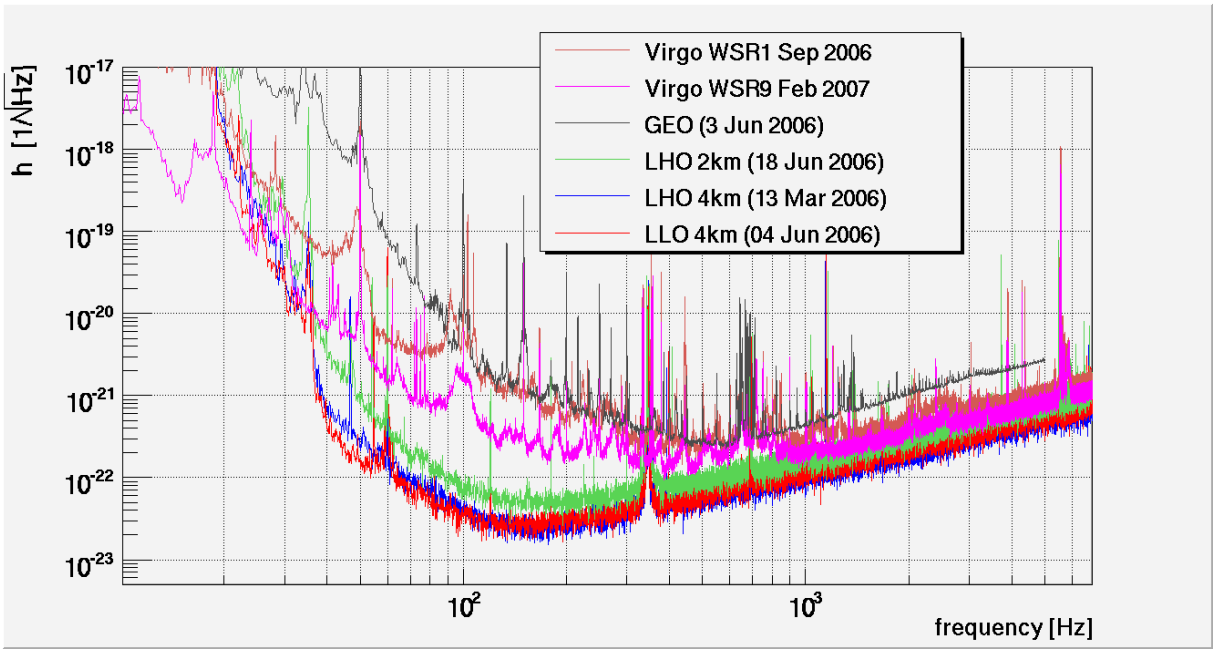

Figure 1: Virgo sensitivity during WSR1 and WSR9 compared to the LSC detector sensitivities running at the same time.

The commissioning is on going. The above figure shows the recent progress and the comparison with the LSC detectors. It should be added that the noise stationarity has also improved a lot as well as the duty cycle. As an example, the Week-end Science Run 9 (WSR9) was a single lock of 55hours. Given these progress, we set to May 18 2007, the target date for the start of our science run in coincidence with the LIGO S5 run. We expect to run for at least 4 months.

3 From now to May 18: commissioning activities.

Over the next months, the commissioning will address the following issues in order to improve the sensitivity especially in the middle frequency range:

Controls/stationarity:

- Test the control of the 'common end' angular degree of freedom with new signal (8MHz modulation) → just started
- Install and commissioning the new SSFS board (frequency stabilization) → will start week 10-11

- Decide if we need to change the locking scheme: use ITF reflection @ 8MHz for frequency stabilization (need new photodiode and commission new scheme) → starting week 8
- Finish the commissioning of the automatic alignment → ongoing
- Reduce the sensitivity to weather condition (suspension control) → ongoing

Noise reduction:

- Understand the electromagnetic noise coupling (100 Hz bumps) and find a way to reduce it → ongoing
- Install new Brewster to reduce diffused light → week 15
- Reduce the diffused light from the end benches and understand if heavier reshuffling is needed. If yes: new optical design needed (can take long). → ongoing
- Reshuffle the external bench optics and install dust protection → week 9
- Install the acoustic isolation of the external bench → week 13 and 15
- Understand the environmental noise from the injection system (structures mainly above 800 Hz) → not started yet
- Improve the OMC matching (improve shot noise and reduce possible side effects of mismatching) → week 9/10
- Reduce the actuator noise (now equivalent to Eddy current noise) → under study
- Understand and cure what we will find below the actual noises ...

"Infrastructure" works:

- Computer farm reorganization / improvements (week 15-16 + some ongoing work)
- New UPS and electrical works (week 15-16)

See more planning details at:

http://wwwcascina.virgo.infn.it/collmeetings/DMwebpages/April2007shutdown.html

4 From May 18 to late September: Science run

This will be in coincidence with LIGO. The already high frequency sensitivity already open the door to interesting searches for “burst” sources.

5 Other milestones

- March 19-22: First joint LSC-VIRGO meeting in Baton Rouge
- April 2-4: Virgo week meeting with a deep discussion on the post science run/Virgo+ schedule. We will review the readiness Virgo+ upgrades and evaluate the state of the commissioning to build the planning to be followed at the end of September.
- May 21-24: Second joint LSC-VIRGO meeting in Pisa/Cascina. We expect to hold a Press conference during this meeting (May 22?)
- June 5 or 6: Workshop on Advanced Virgo