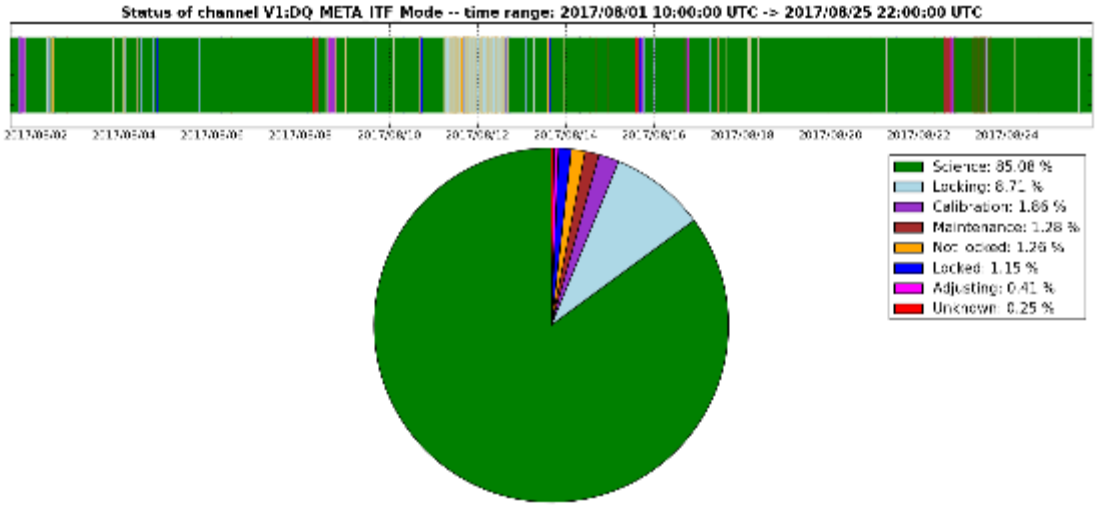
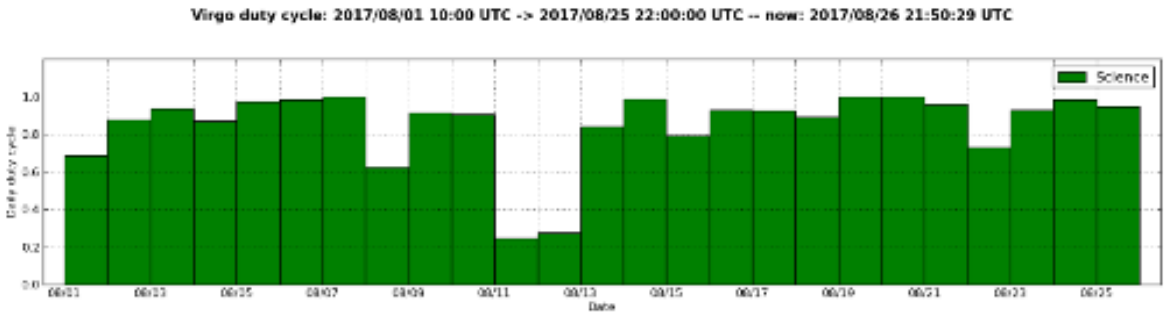
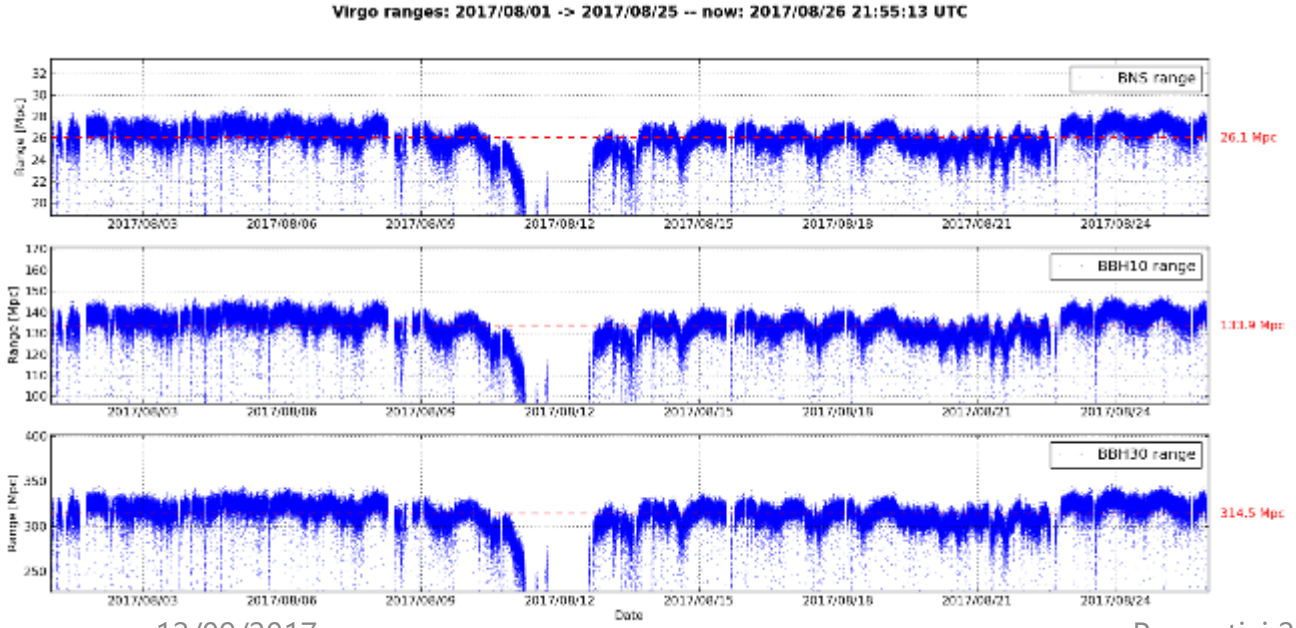
Introduzione

Preventivi 2018

VIRGO - O2 highlights





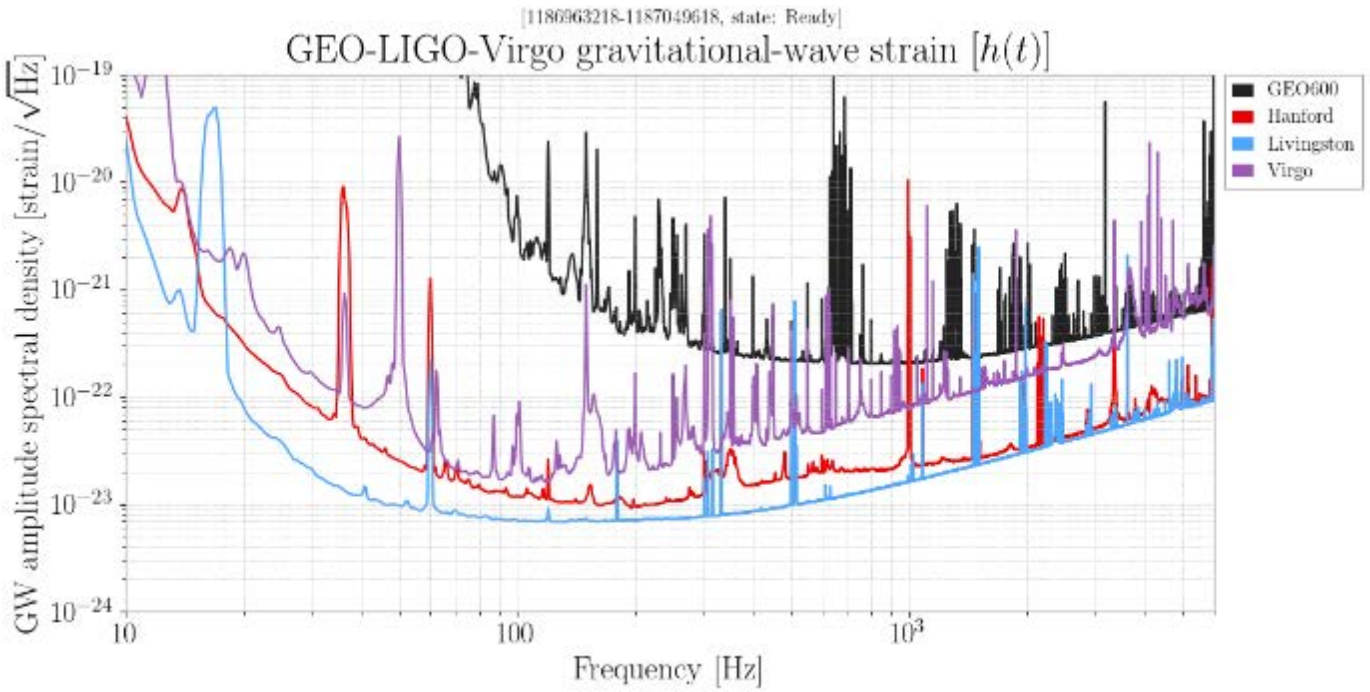


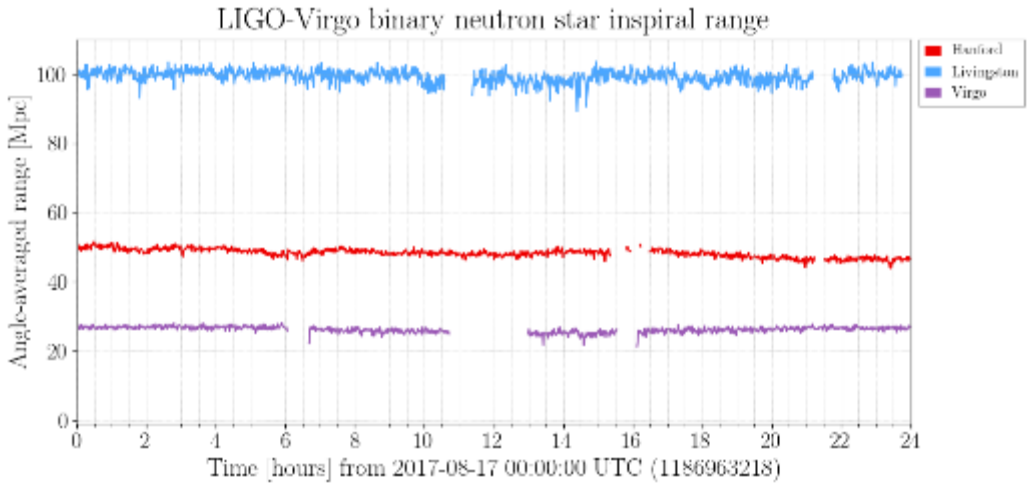
Highest BNS range: 28.2 Mpc

Longest stable lock: 69 hours

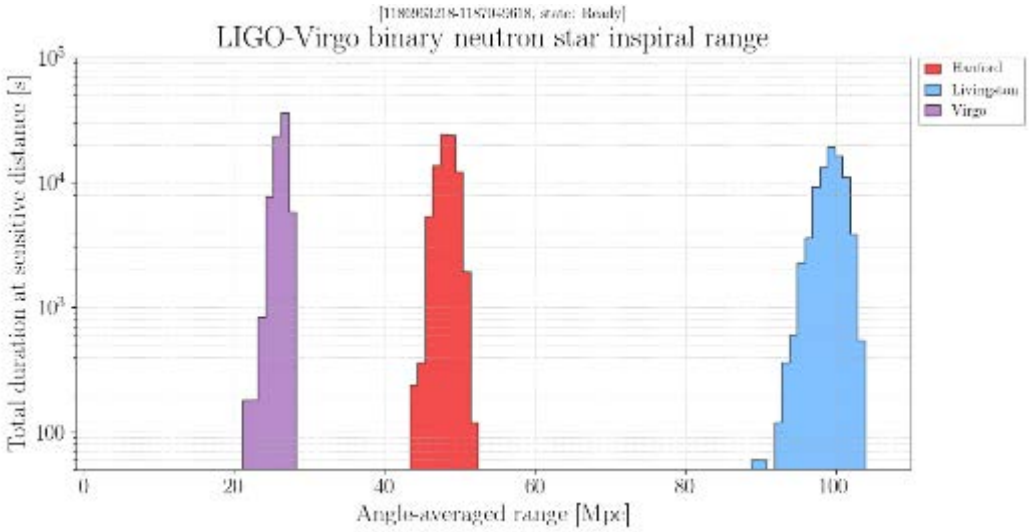
Science duty cycle: 85%

O2 sensitivities





BNS range, averaged over source direction



Upgrades during the O2-O3 break

- At least 12 months break between O2 and O3 (likely 15-18 months)
- Planned major upgrades
  - **Monolithic suspensions** / vacuum upgrade for dust protection (A. Rocchi)
  - High power laser (A. Rocchi)
  - **Frequency independent squeezing** (J.-P. Zendri)
  - Newtonian noise test installation
  - *Power recycling mirror exchange only if problems with CITF stability*
  - *Signal recycling → after O3*

- Three months post-O2 commissioning for studying recycling cavity and debugging the interferometer
- Three months (or more) pre-O3 noise hunting and optimization

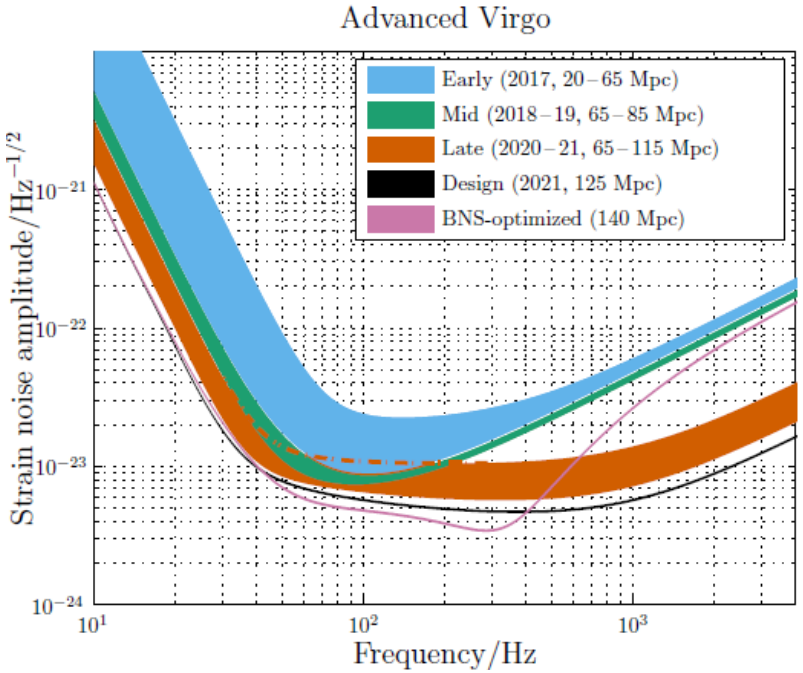
Beyond O3

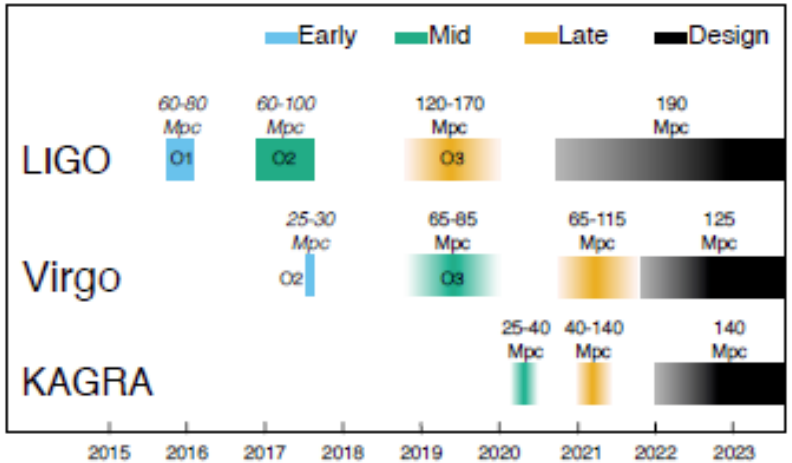
- **Maximize sensitivity of VIRGO** within current infrastructure limits:
  - **quantum noise** (F. Sorrentino)
  - **mirror thermal noise** (A. Viceré)
  - **seismic and newtonian noise** (G. Cella)
- Phased approach:
  - Phase I: achieve design sensitivity (2017 – 2021)
  - Phase II: achieve maximum sensitivity within infrastructure limits (2021 – 2025)
  - Phase III: optimize AdV in view of a new infrastructure (> 2025)

A Vision Beyond the Advanced Virgo Project

VIR-0136A-16

  - **Attract new groups**, with different and complementary expertise, to fully exploit the science that the detector **is going to deliver**
    (instrument, data analysis, EM follow-up, theory)





VIRGO - Preventivi 2018 - Meeting con i referees

Tuesday, 12 September 2017 from **10:00** to **16:00** (Europe/Rome)
at **EGO, Cascina (Council Room)**
Via E. Amaldi 56021 S. Stefano a Macerata - Cascina (PI)

Tuesday, 12 September 2017

10:00 - 10:15 Introduzione *15'*
Speaker: Gianluca Gemme (GE)

10:15 - 11:30 Stato del detector e preparazione per O3
- 10:15 **Stato del detector e attività 2018** *45'*
  Speaker: Alessio Rocchi (ROMA2)
- 11:00 **Frequency independent squeezing: stato e attività 2018** *30'*
  Speaker: Jean Pierre Zendri (PD)

11:30 - 11:45 Coffee break

11:45 - 13:15 Verso la design sensitivity
- 11:45 **Frequency dependent squeezing: EPR** *30'*
- 12:15 **R&D on mirror coatings** *30'*
  Speaker: Andrea Vicerè (FI)
- 12:45 **Mitigazione del rumore sismico e newtoniano** *30'*
  Speaker: Giancarlo Cella (PI)

13:15 - 14:00 Pranzo

14:00 - 15:00 Computing & Data analysis
- 14:00 **Computing** *30'*
  Speaker: Michele Punturo (PG)
- 14:30 **Data analysis** *30'*
  Speaker: Giovanni Andrea Prodi (TIFP)

15:00 - 15:45 Presentazione nuovi gruppi
- 15:00 **Gruppo "teorico": Mib/TO** *15'*
- 15:15 **UniSannio/INFN-Salerno** *15'*
- 15:30 **GSSI** *15'*
  Speaker: Jan Harms (FI)

15:45 - 16:00 Conclusioni *15'*
Speaker: Gianluca Gemme (GE)