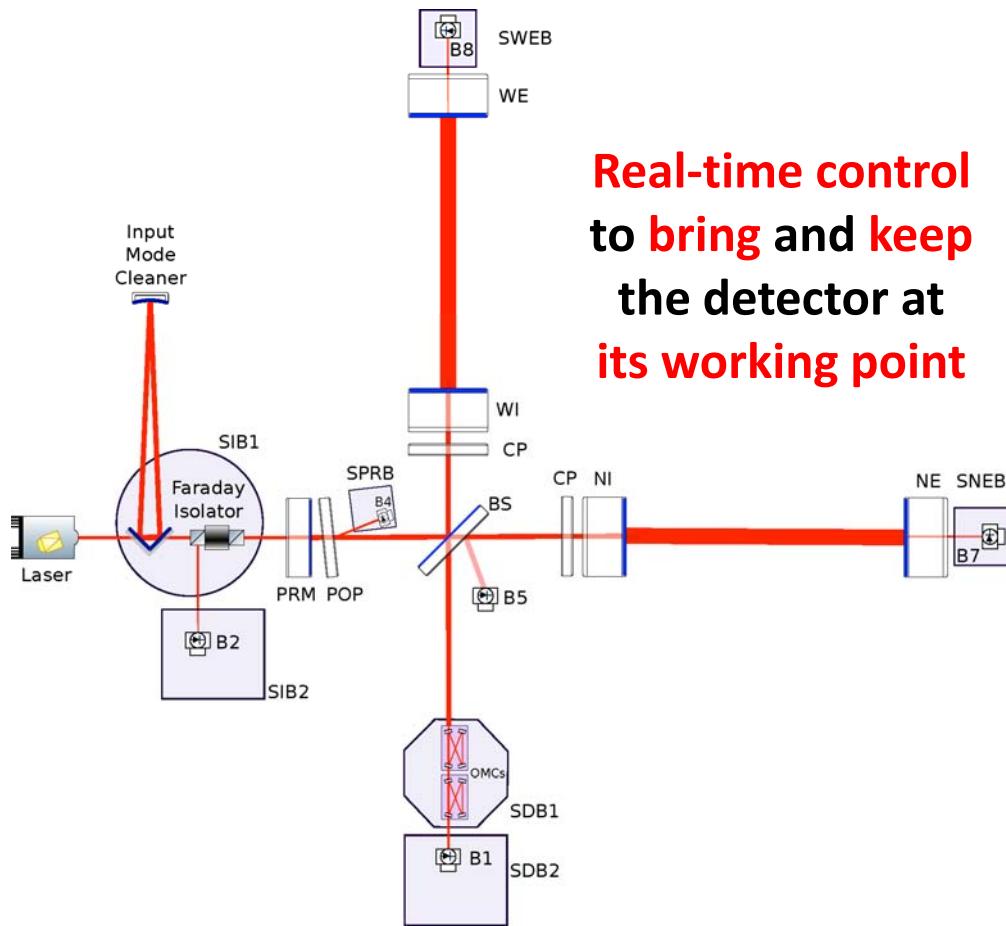


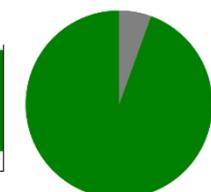
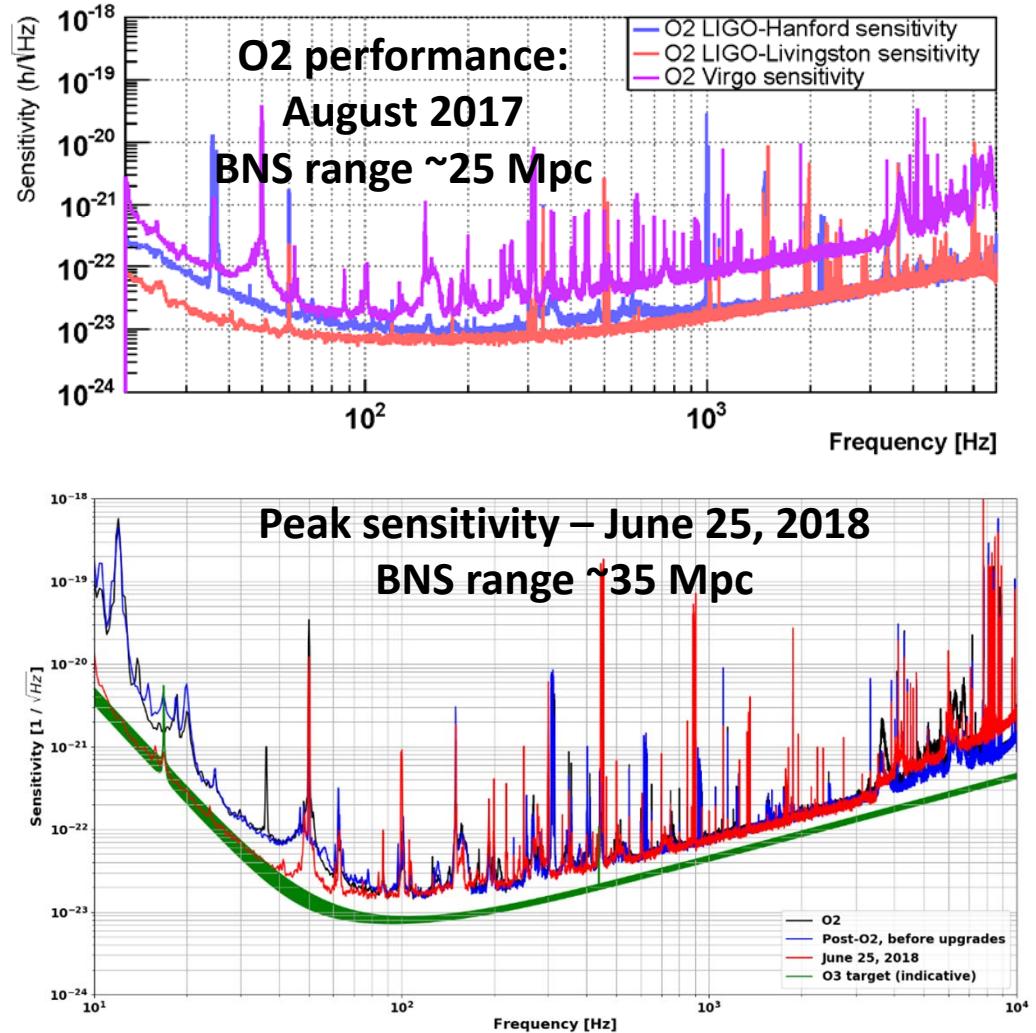
Assemblée générale du GdR Ondes Gravitationnelles Univ. Paris-Diderot, 18-19 octobre 2018

Nicolas ARNAUD (narnaud@lal.in2p3.fr)
LAL (CNRS/IN2P3 et Université Paris-Sud)
European Gravitational Observatory (CNRS & INFN)

Principle and state-of-the-art



Suspended and power-recycled Michelson interferometer, with Fabry-Perot cavities in the 3-km long arms



BNS range: 17 Mpc

Questions & Challenges

- Improvements in between the O2 and O3 runs

- Monolithic suspensions + vacuum system
- High-power laser
- Frequency-independent squeezing

- Short-term: getting ready for O3 – commissioning

- Sensitivity
 - Figure of merit: BNS range – currently \sim 20 Mpc
- Duty cycle
- Noise stationarity and stability

- Open public alert era

- Lowest possible latency
- Vetting / retraction
- Larger number of events
 - Automate processing
 - ◆ Efficiency vs. false alarm rate

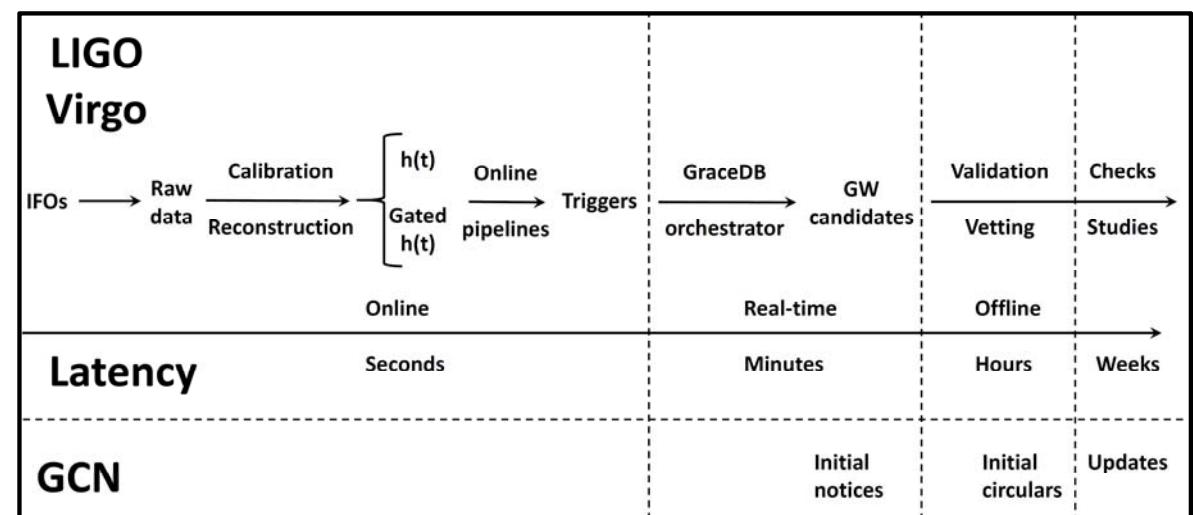
- Enlargement of the Virgo collaboration

- New groups: more manpower & resources, new skills, experience

- Longer term

- Future upgrades
- Project Advanced Virgo+

Input power increase
Low-frequency noise
Still noise in the ‘sensitivity bucket’



Virgo: 8 countries
22 groups
280 authors

Planning

- Pre-O3 commissioning until early 2019
 - Commissioning runs – Virgo-only
 - ◆ Most recent was last weekend
 - Two engineering runs – LIGO-Virgo
 - ◆ End of 2018: 1 week-long
 - ◆ Right before O3 starts: 1 month
- LIGO-Virgo O3 run: 1 year
 - Maximize triple coincidence duty cycle
 - KAGRA (Japan) may join the last part of the run
→ 4-detector network!
- Upgrades + commissioning: 1 year
 - Signal recycling
 - Frequency-dependent squeezing
 - High power laser
- LIGO-Virgo O4 run: at least 1 year
- Longer term: Advanced Virgo+
 - Project on its way to approval; EGO/Virgo management structure soon in place
 - Human resource and spending requests being submitted to funding agencies and partners
 - Baseline design report reviewed by an international committee (like for AdV) next Spring

