

Today's visit

Group from Marlborough College Blackett Observatory
EGO visit, April 3rd 2017

Nicolas Arnaud (narnaud@lal.in2p3.fr)

Laboratoire de l'Accélérateur Linéaire (CNRS/IN2P3 & Université Paris-Sud)
European Gravitational Observatory (Consortium, CNRS & INFN)



Welcome!

- Welcome to the **European Gravitational Observatory (EGO)**
 - **Site of the Virgo experiment**
 - Virgo is a **giant** (3-km arms) **suspended** and **recycled Michelson interferometer** designed to make **direct detections of gravitational wave (GW)** signals
 - **Advanced Virgo (AdV)** is the second generation Virgo detector
 - **Commissioning in progress after a 5-year upgrade**
 - **Goal: improve the overall sensitivity by one order of magnitude**
- Next step: **join the two Advanced LIGO (aLIGO) detectors in Spring 2017**, for a **first common data taking period**

The Virgo site

Leaning Tower of Pisa

Pisa airport
Runway length: 3 km

Zoom

Virgo

European Gravitational Observatory

The Virgo Collaboration

- 6 European countries



- 21 laboratories

- About 300 members (LIGO : 750)



The Virgo Collaboration

- 6 European countries



- 21 laboratories

- About 300 members (LIGO: 750)

- Virgo was built by 11 **CNRS** (France) and **INFN** (Italy) laboratories

- Budget: ~150 M€
- Groups from the Netherlands, Poland, Hungary and Spain joined later the project

- Advanced Virgo funding: ~20 M€

- Plus in-kind contribution from NIKHEF

- The **EGO** (European Gravitational Observatory) consortium is managing the Virgo site in Cascina. It provides the infrastructures and resources to ensure the detector construction and operation

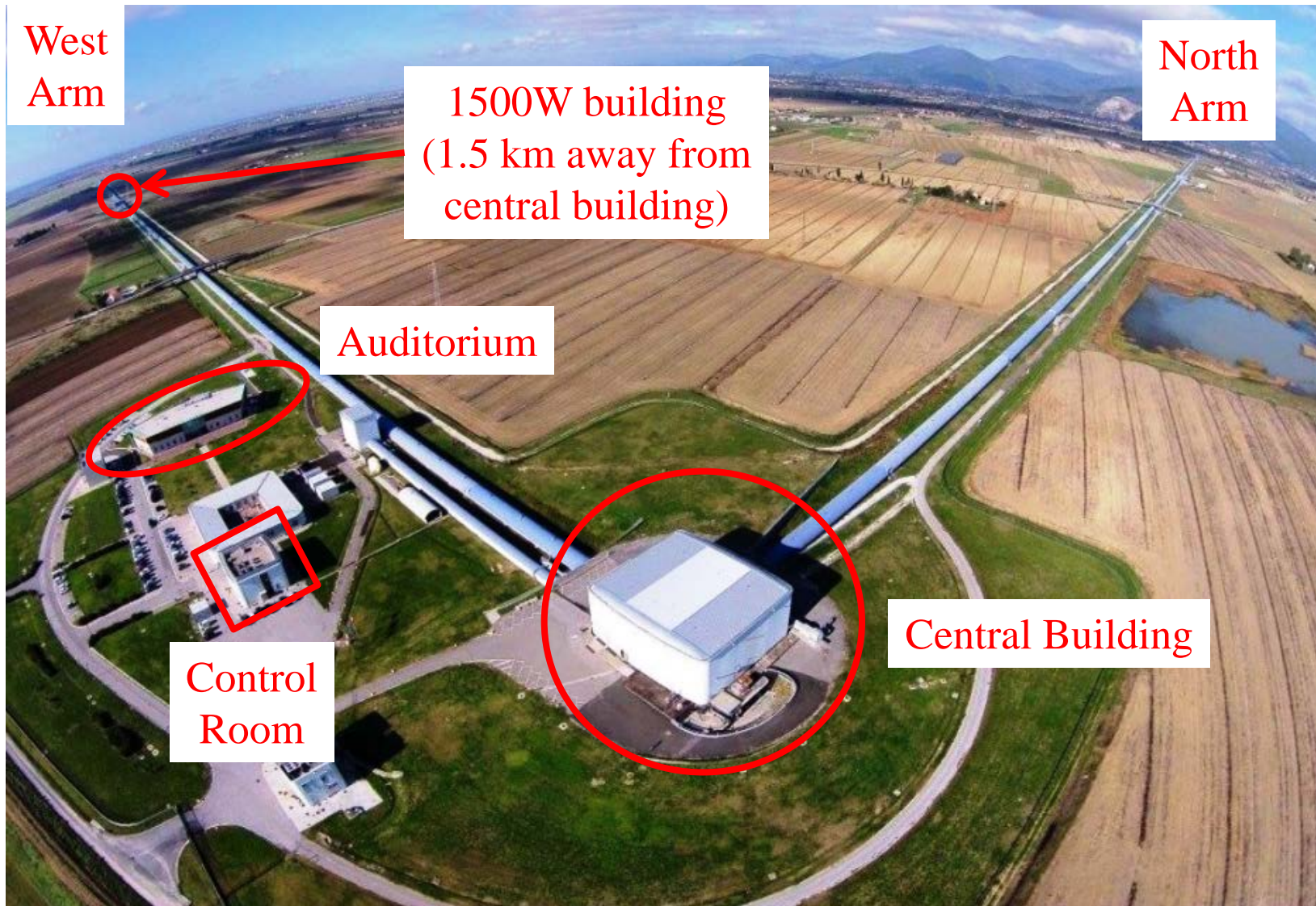
APC Paris
ARTEMIS Nice
EGO Cascina
INFN Firenze-Urbino
INFN Genova
INFN Napoli
INFN Perugia
INFN Pisa
INFN Roma La Sapienza
INFN Roma Tor Vergata
INFN Padova
INFN TIFPA
LAL Orsay – ESPCI Paris
LAPP Annecy
LKB Paris
LMA Lyon
NIKHEF Amsterdam
POLGRAW (Poland)
RADBOUD Uni. Nijmegen
RMKI Budapest
Valence University

A bit of history

- 1980's: Collaboration between **Alain Brillet** (CNRS, Orsay, lasers) and **Adalberto Giazotto** (INFN, Pisa, suspensions)
- 1989: **Proposal**
- June 27 1994: **Project approved** by CNRS and INFN
- May 1997: Final **design report**
- 2003: **End of construction phase**
- 2007-2010: **Data taking periods**
 - Virgo first, then Virgo+
- 2011-2016: **Upgrade to Advanced Virgo**
 - 2015: **first direct detections of gravitational waves**
 - Data recorded by the two Advanced LIGO detectors
 - Jointly analyzed by LIGO and Virgo
- 2017: **First joint Advanced LIGO – Advanced Virgo data taking period [!!!???)**



Virgo from the sky



Virgo at home...

