

Introduction

M2 P3TMA (Marseille) Visit, October 28 2016

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European Gravitation Observatory (Consortium, CNRS & INFN)



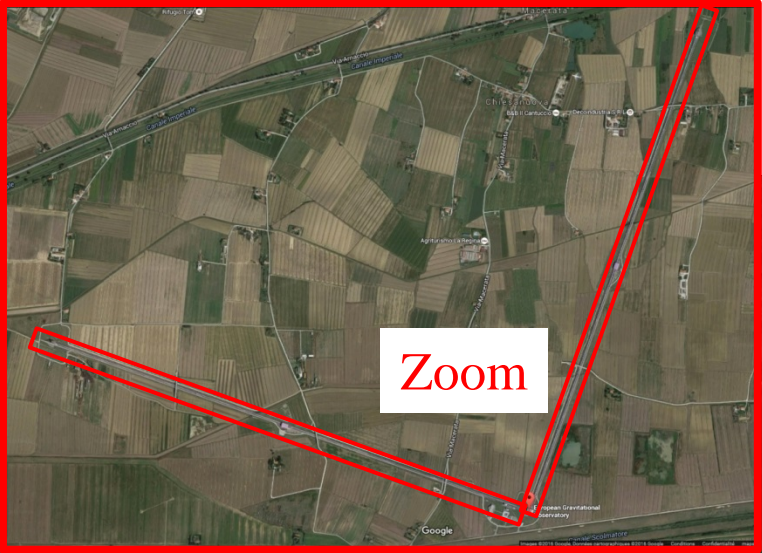
Welcome!

- 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 March 2017**, for a **first common data taking period**

The Virgo site

Leaning Tower of Pisa

Pisa airport
Runway length: 3 km



Virgo

European Gravitational Observatory

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**
- 2017: **First joint Advanced LIGO** – Advanced Virgo data taking period [!!!???

Program of today's visit

- Indico page: <https://events.ego-gw.it/indico/conferenceDisplay.py?confId=46>

Visite Master2 P3TMA (Marseille)

chaired by Nicolas Arnaud (LAL (CNRS/IN2P3 & Université Paris-Sud)), Severine Perus

Friday, 28 October 2016 from **08:00** to **18:00** (Europe/Rome)
at **EGO, Virgo site**

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Description The details of the afternoon visit will depend on the site activities scheduled for that day.

Friday, 28 October 2016

10:00 - 10:30	Accueil, présentation de la visite 30' Speaker: Dr. Nicolas Arnaud (LAL (CNRS/IN2P3 & Université Paris-Sud))	▼
10:30 - 11:30	Detecting gravitational waves with Virgo 1h0' Speaker: Dr. Annalisa Allocca (INFN Pisa)	▼
11:30 - 12:30	The first two direct detections of gravitational waves: GW150914 and GW151226 1h0' Speaker: Dr. Nicolas Arnaud (LAL (CNRS/IN2P3 & Université Paris-Sud))	▼
12:30 - 13:30	Gravitational wave and multi-messenger astronomy 1h0' Speaker: massimiliano razzano (Physics Department of the University of Pisa and INFN-Pisa)	▼
13:30 - 15:00	Déjeuner	
15:00 - 16:30	Site visit 1h30'	▼

Virgo from the sky

