

# The future of research on cosmic gamma rays

La Palma, Canary Islands  
26-29 August 2015

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# Welcome to La Palma

- A wonderful island, fundamental for the past, the present and the future of gamma-ray astrophysics

# La Palma hosted the HEGRA experiment

- A “1-st generation” imaging gamma-ray Cherenkov telescope (1987-2002)



# Not only HEGRA

- CLUE (UV Cherenkov), CRT (detector for charged secondaries)
- FACT (you will see it on Thursday)

And presently, one of the three large  
2nd -generation IACTs: MAGIC (2004-)



Behind all this and  
more, the  
fundamental  
contribution of  
Eckart Lorenz



# What about the future?

- We are here to discuss the many possible directions of the future
- A highway is already in construction: CTA
  - With wonderful opportunities for the development of new, advanced detectors
- But new paths will be open, and we hope this workshop will host discussions and clarify these new opportunities

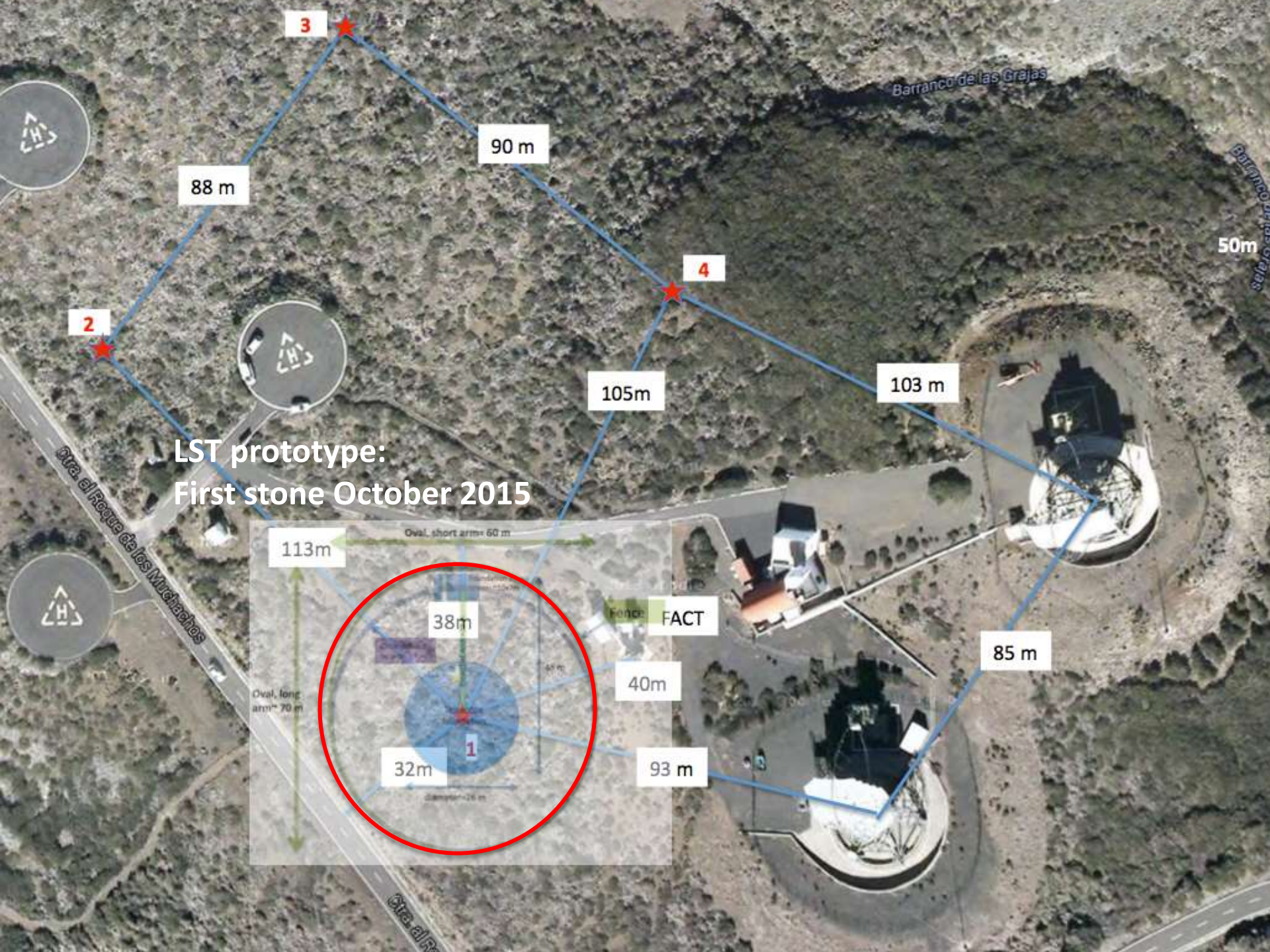




# LST



- 23 m diameter (400 m<sup>2</sup> dish area)
- 28 m focal length
- 200x2m<sup>2</sup> hexagonal mirrors
- 4.5 deg FoV
- 0.1° pixels, camera diam. 2m
- Light structure for 20 s positioning
- AMC
- 4 LSTs on North site, 4 LSTs on South site
- Prototype = 1st telescope at La Palma.
- Construction starts October 2015
- Japan, Germany, Spain, INFN Italy, IN2P3 France, India, Brazil, Croatia



LST prototype:  
First stone October 2015



Barranco de las Grajas

Barranco de las Grajas  
50m

Ctra. el Roque de los Muchachos

Ctra. al Río

88 m

90 m

2

4

105m

103 m

113m

38m

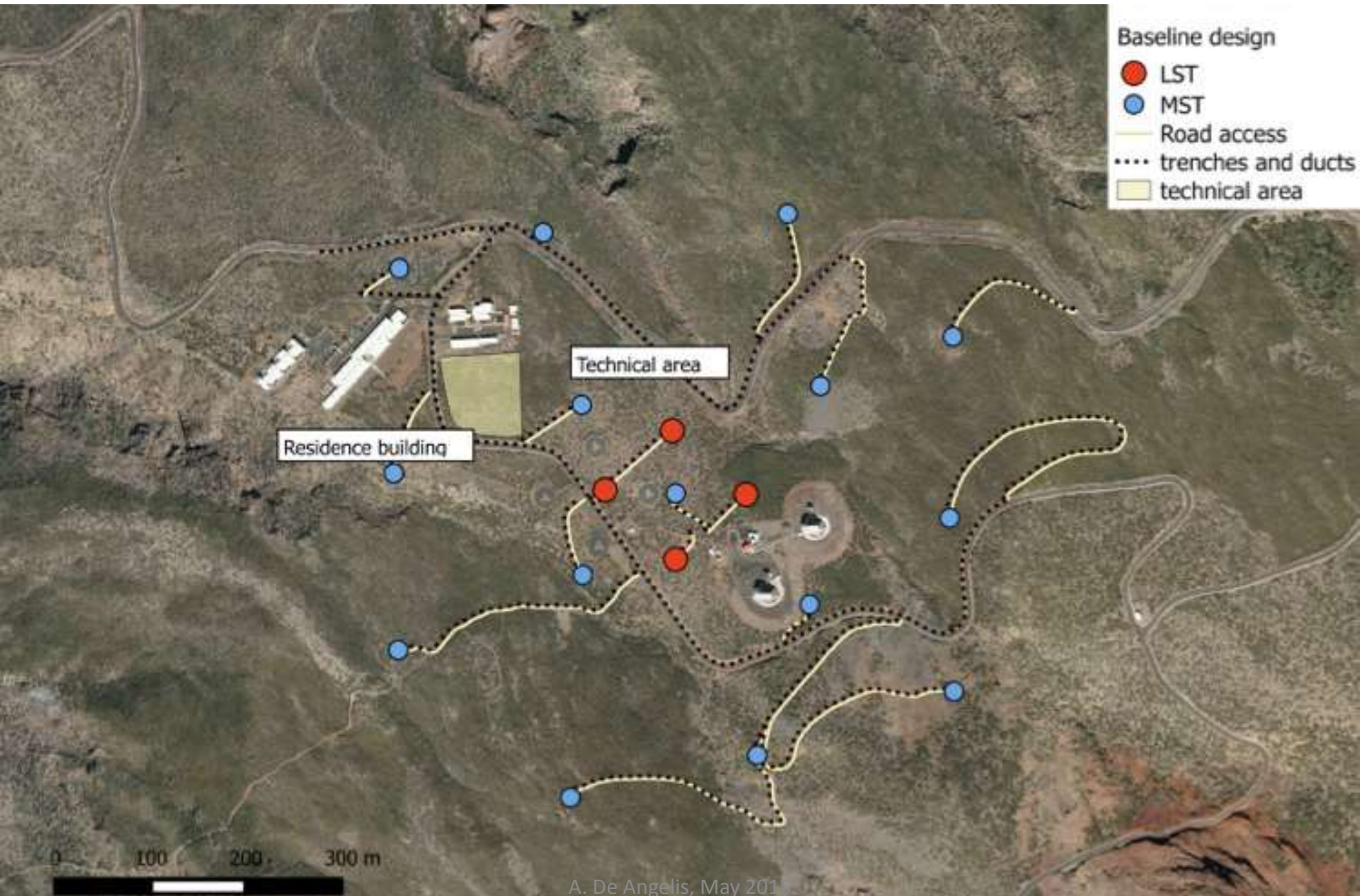
40m

85 m

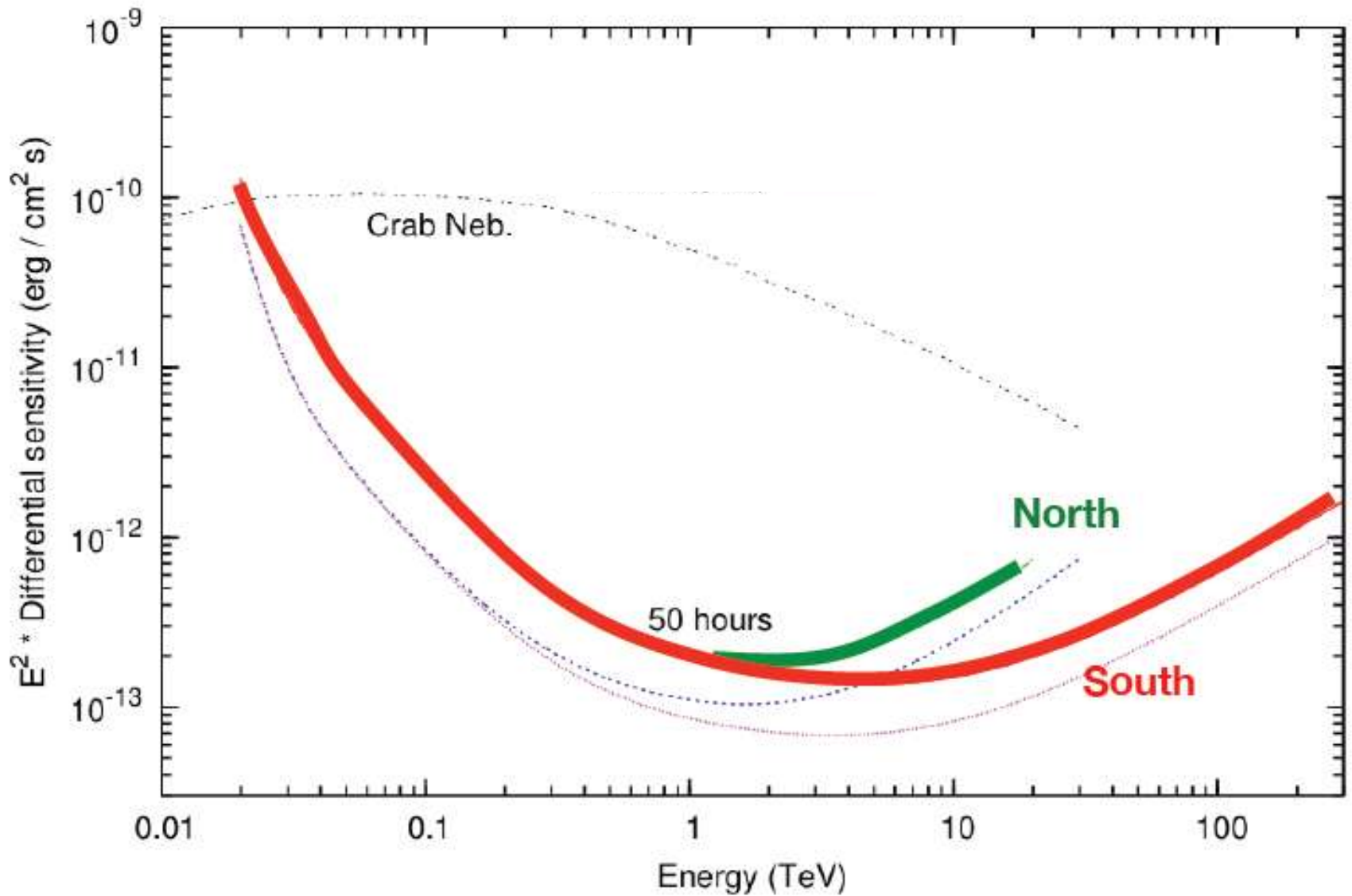
32m

93 m

# CTA-N: possible scheme

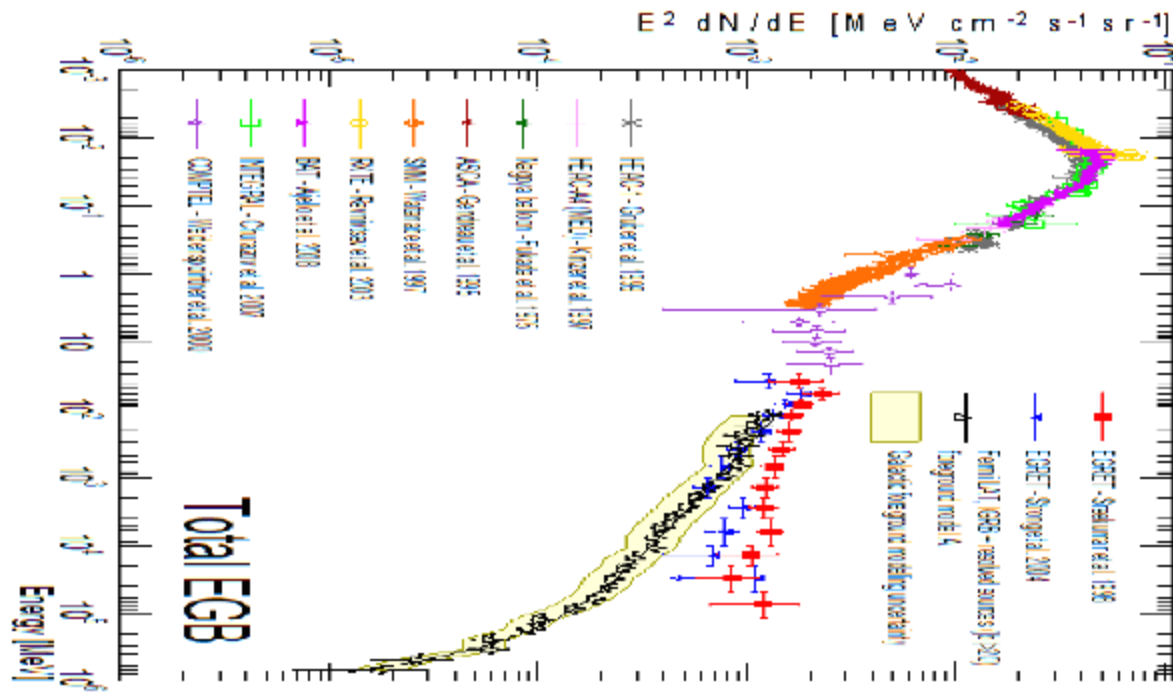


# Sensitivity



# New paths besides CTA (1)

- Missions below 20 GeV (space missions, IACTs?)
- Missions at the MeV
- Studies of polarization
- Physics at the PeV (alternatives to IACTs)



# Besides CTA (2)

- Multimessenger (neutrinos)
  - A view complementary to gammas
  - Larger mean free path
  - Clear separation between hadronic and leptonic processes
- Multimessenger (charged cosmic rays?)
- And all this has strong motivations and implications ranging from astrophysics to fundamental physics

# **Some practical information about this workshop**

- Visit to Roque on Thursday: be ready at 12:30
  - Dress properly (it can be windy)
  - Take your hat and your sunglasses and put solar cream (it will be sunny)
- If you have any special constraints about the food (vegetarian, etc.) say it to Sybille now
- Don't forget to load your talks in the official computer or to give them to Sybille



# Thanks to...

- Sybille Rodriguez, MPI Munich (general organization)
- Hugo Gomes, LIP Lisboa (Web manager)
- Elena Pavan, INFN Padova (indico)
- Natalia Antunes, LIP Lisboa (administration)
- Mave Martin-Rodriguez, FGG La Palma (trip to Roque)
- The staff at the MAGIC telescope
  
- Our sponsors (INAF, INFN, LIP, MPI, TNG/FGG)
- IAC and the Cabildo Insular de La Palma