



ATTIVITÀ ASTROFISICA MULTIFREQUENZA E MULTIMESSAGGERO

S. Germani

stefano.germani@unipg.it

IL GRUPPO



Pasquale Lubrano - INFN PG

pasquale.lubrano@pg.infn.it



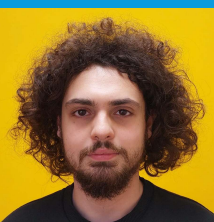
Sara Cutini - INFN PG

sara.cutini@pg.infn.it



Stefano Germani - UniPG

stefano.germani@unipg.it



Sara Cutini - UniPG

francesco.casiniz@studenti.unipg.it

Gino Tosti - UniPG

gino.tosti@unipg.it



Emanuele Fiandrini - UniPG

emanuele.fiandrini@unipg.it



Paolo Cristarella Orestano - UniPG

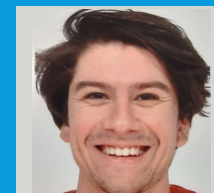
paolo.cristarellaorestano@studenti.unipg.it

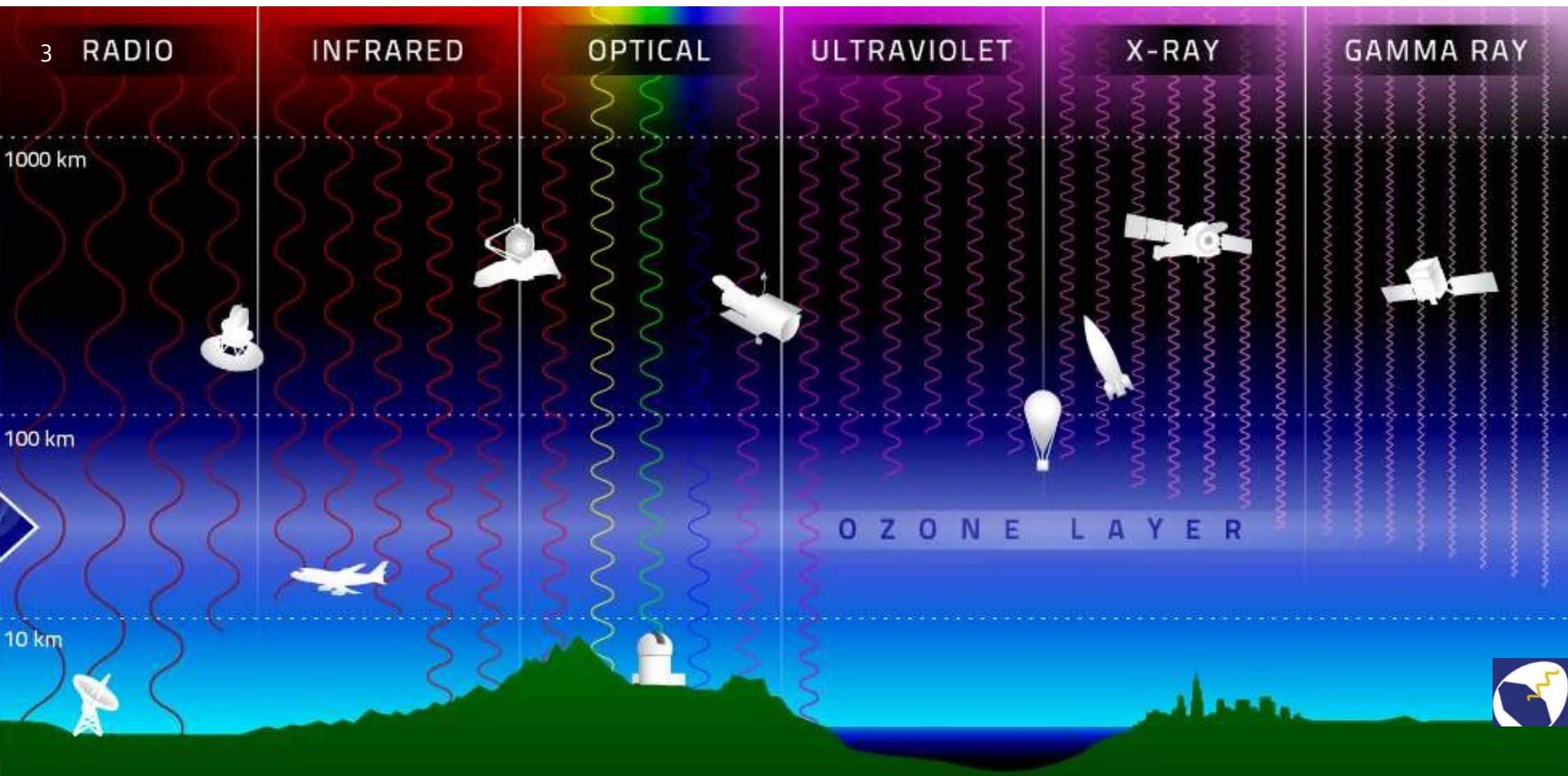


Collegato con il team GW

Tobia Matcovich - INFN

tobia.matcovich@pg.infn.it





3 RADIO

INFRARED

OPTICAL

ULTRAVIOLET

X-RAY

GAMMA RAY

1000 km

100 km

10 km

O Z O N E L A Y E R



4

VIA LATTEA MULTIFREQUENZA



Radio 408 MHz

This image shows the Milky Way galaxy in the radio spectrum at 408 MHz. The galaxy appears as a bright, horizontal band of emission, with a prominent central region and several smaller, distinct spots of emission scattered throughout the disk.




Idrogeno Molecolare

This image shows the Milky Way galaxy in the molecular hydrogen (H₂) emission spectrum. The galaxy appears as a bright, horizontal band of emission, with a prominent central region and several smaller, distinct spots of emission scattered throughout the disk.



Medio Infrarosso

This image shows the Milky Way galaxy in the medium infrared spectrum. The galaxy appears as a bright, horizontal band of emission, with a prominent central region and several smaller, distinct spots of emission scattered throughout the disk.



Vicino Infrarosso

This image shows the Milky Way galaxy in the near infrared spectrum. The galaxy appears as a bright, horizontal band of emission, with a prominent central region and several smaller, distinct spots of emission scattered throughout the disk.



Ottico

This image shows the Milky Way galaxy in the optical spectrum. The galaxy appears as a bright, horizontal band of emission, with a prominent central region and several smaller, distinct spots of emission scattered throughout the disk.



Raggi X

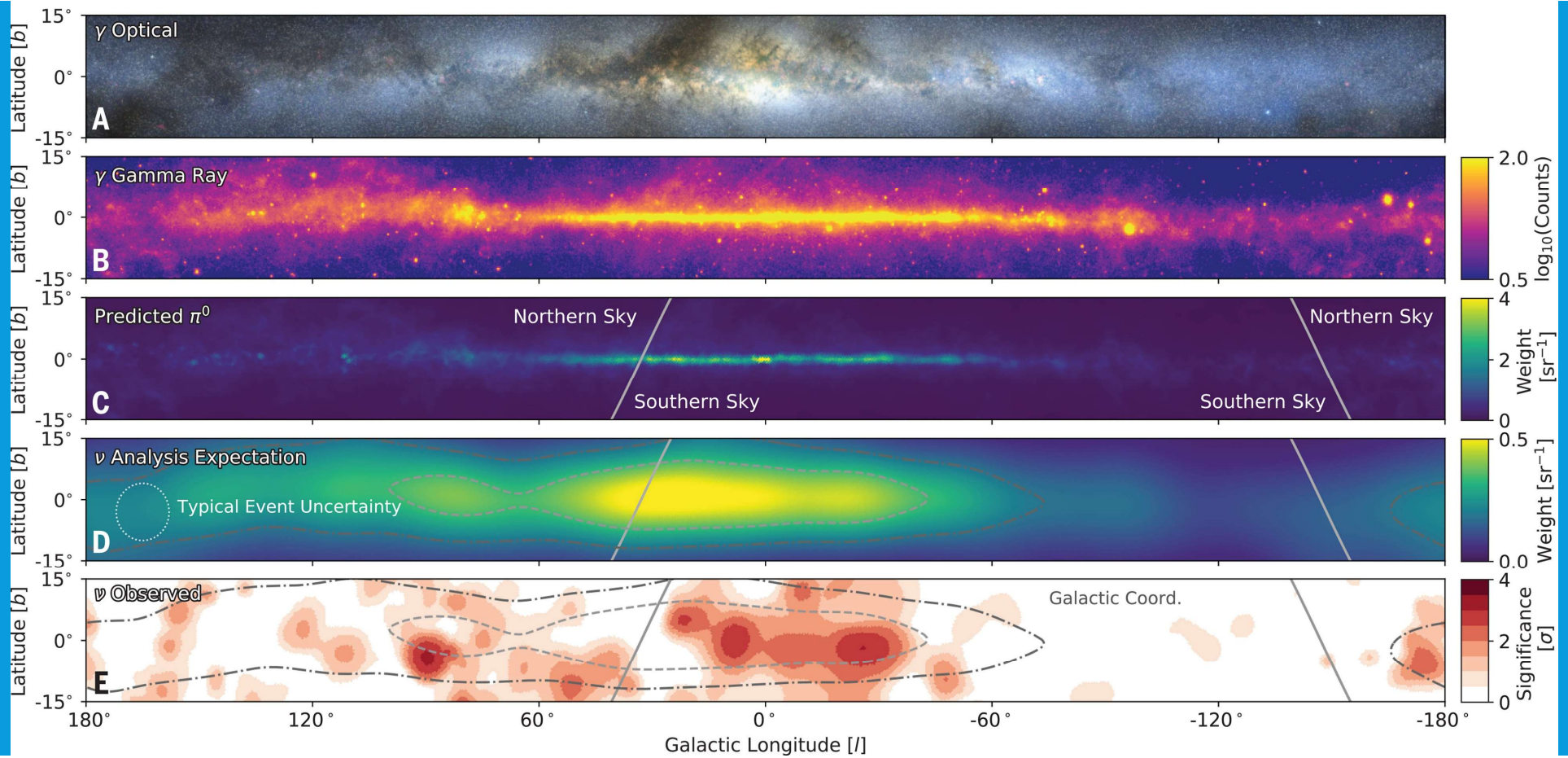
This image shows the Milky Way galaxy in the X-ray spectrum. The galaxy appears as a bright, horizontal band of emission, with a prominent central region and several smaller, distinct spots of emission scattered throughout the disk.



Raggi γ

This image shows the Milky Way galaxy in the gamma-ray spectrum. The galaxy appears as a bright, horizontal band of emission, with a prominent central region and several smaller, distinct spots of emission scattered throughout the disk.

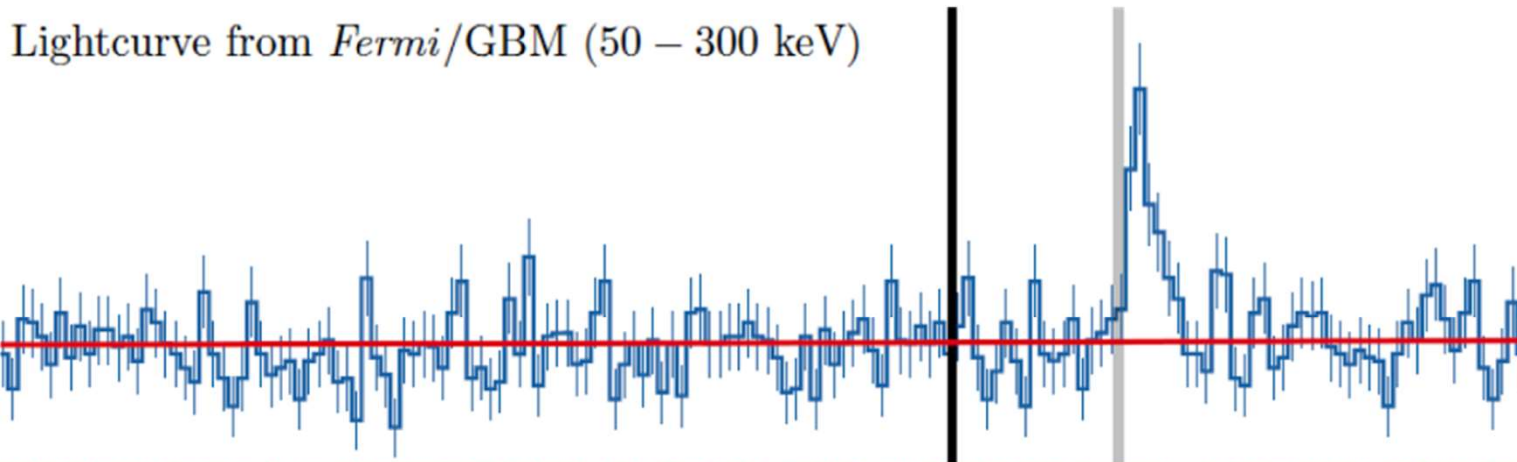
VIA LATTEA MULTIMESSAGGERO



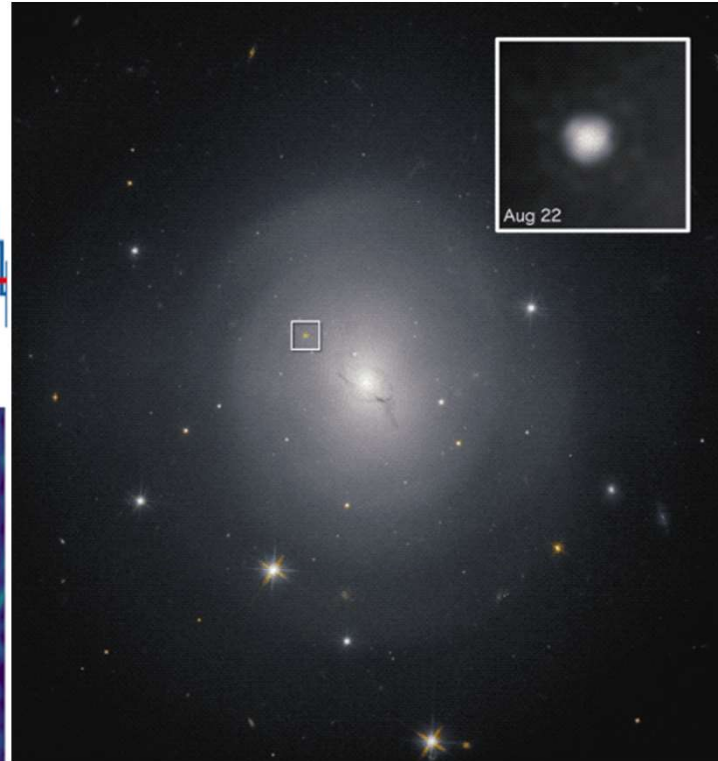
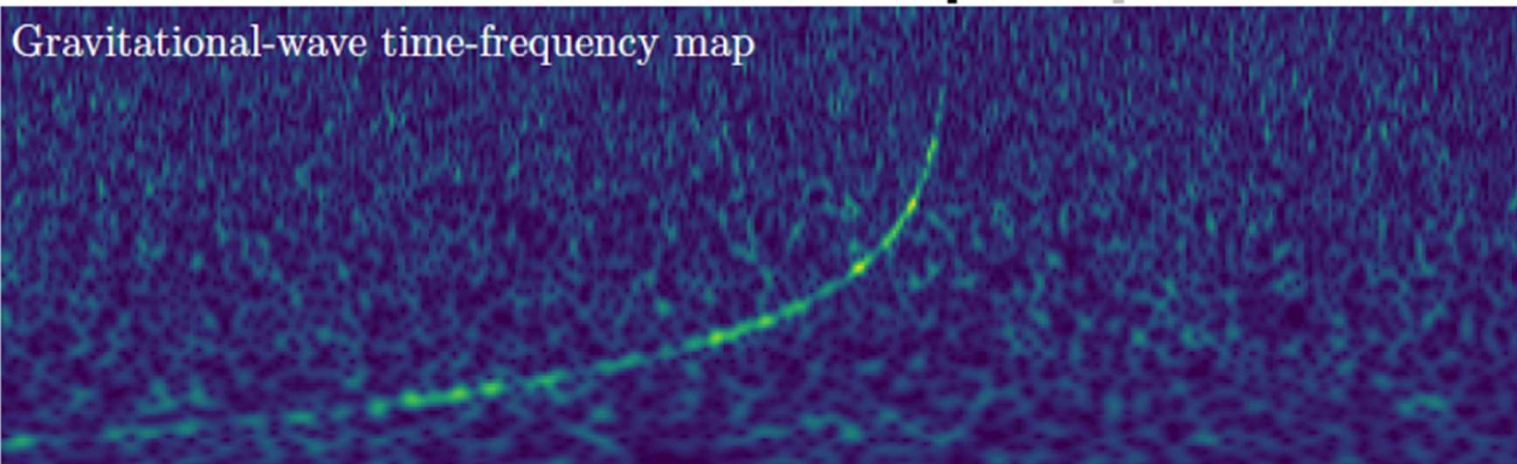
6

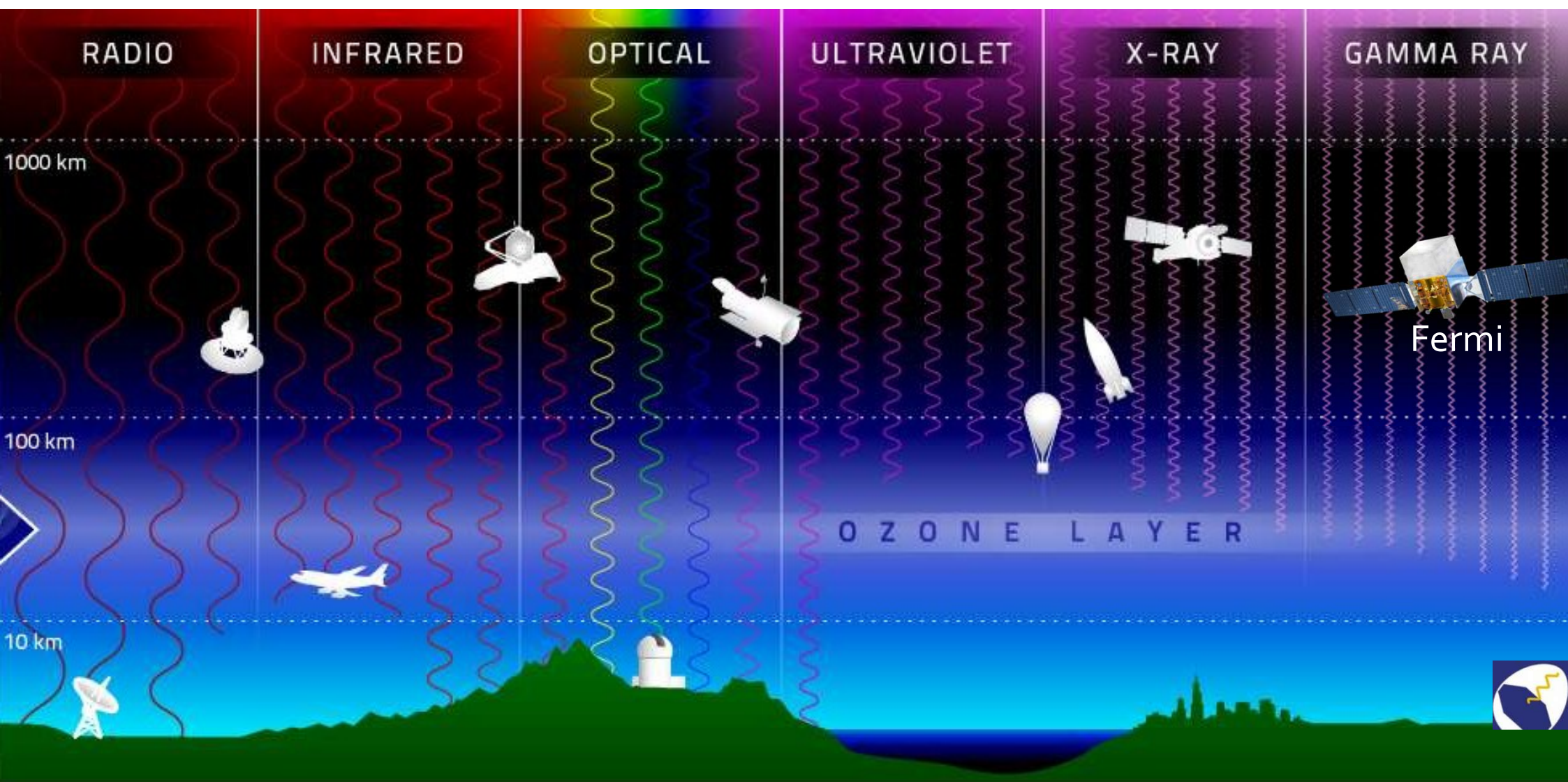
ASTRONOMIA MULTIMESSAGGERO

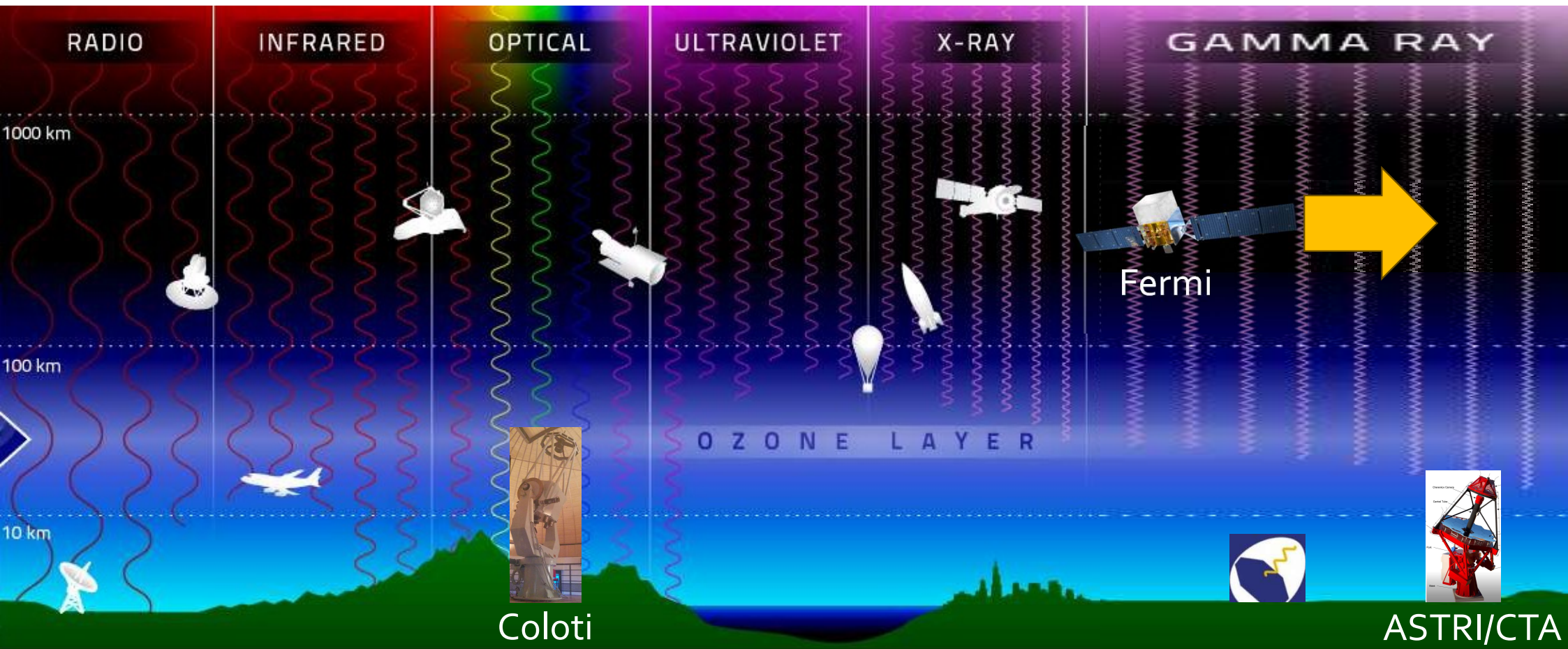
Lightcurve from *Fermi*/GBM (50 – 300 keV)



Gravitational-wave time-frequency map








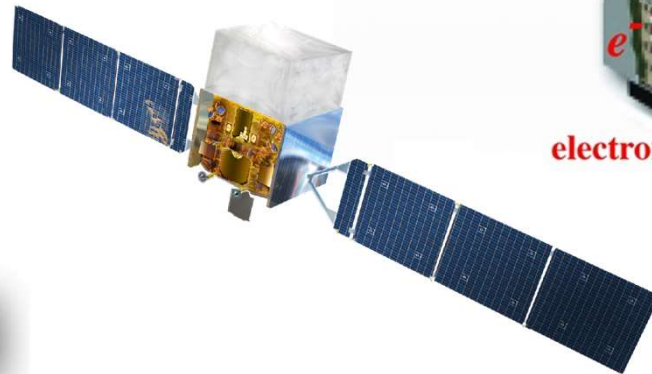
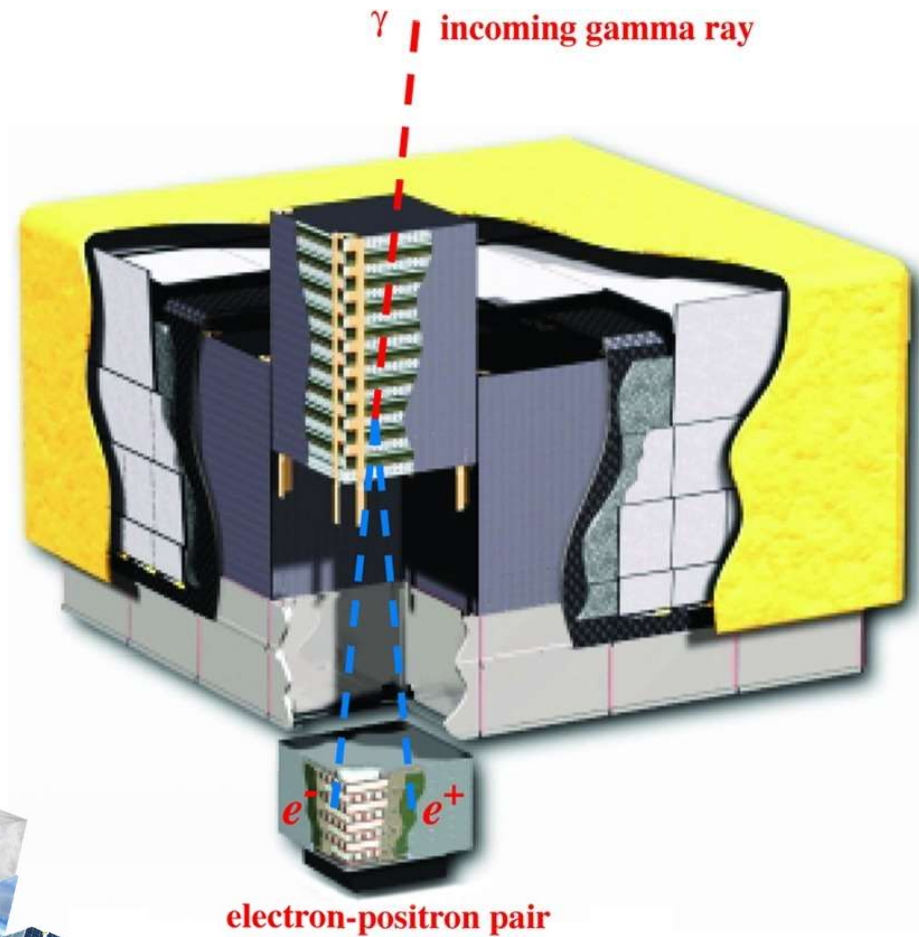
Coloti

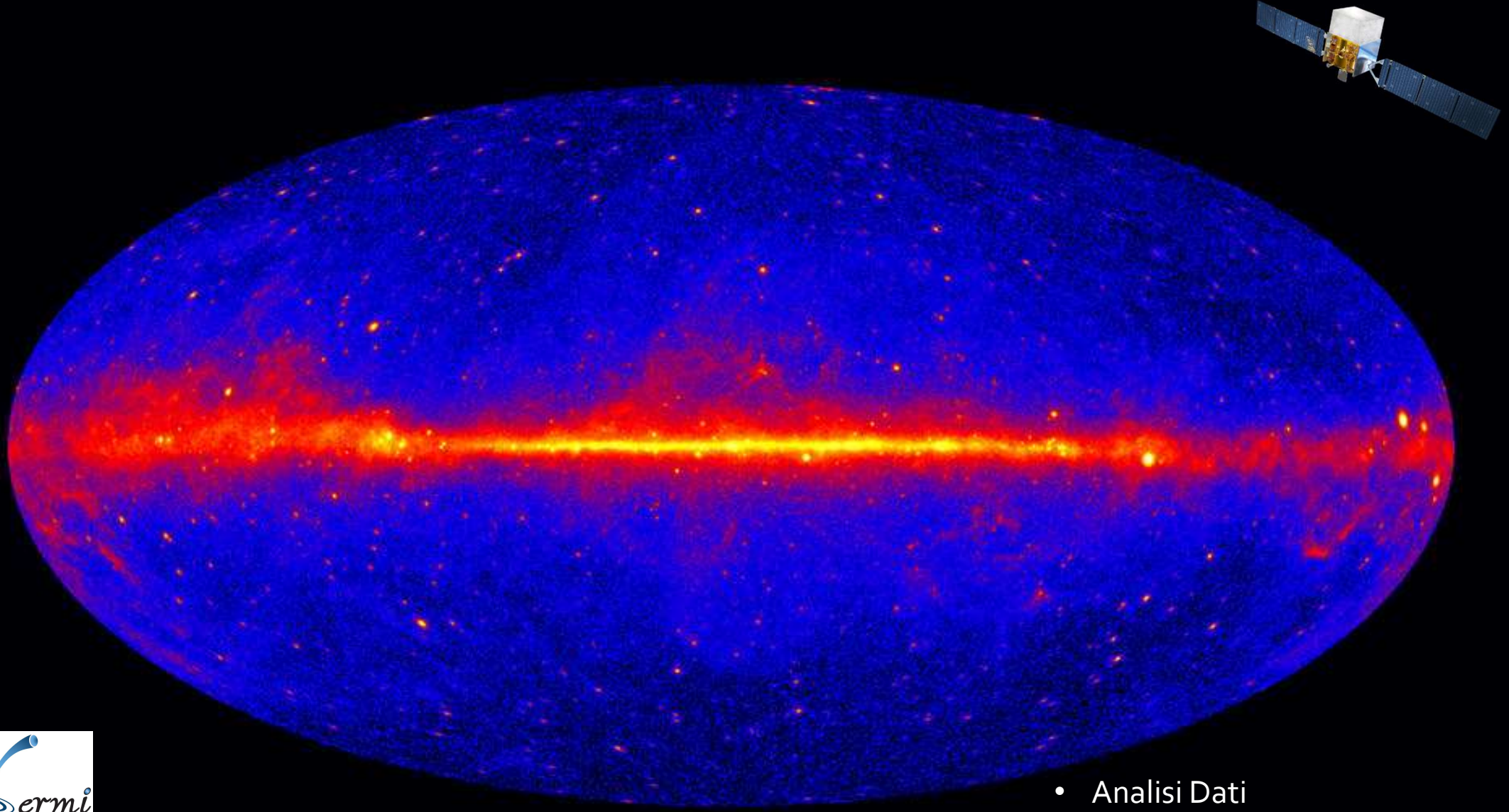
Fermi

ASTRI/CTA



Fermi
Gamma-ray
Space Telescope





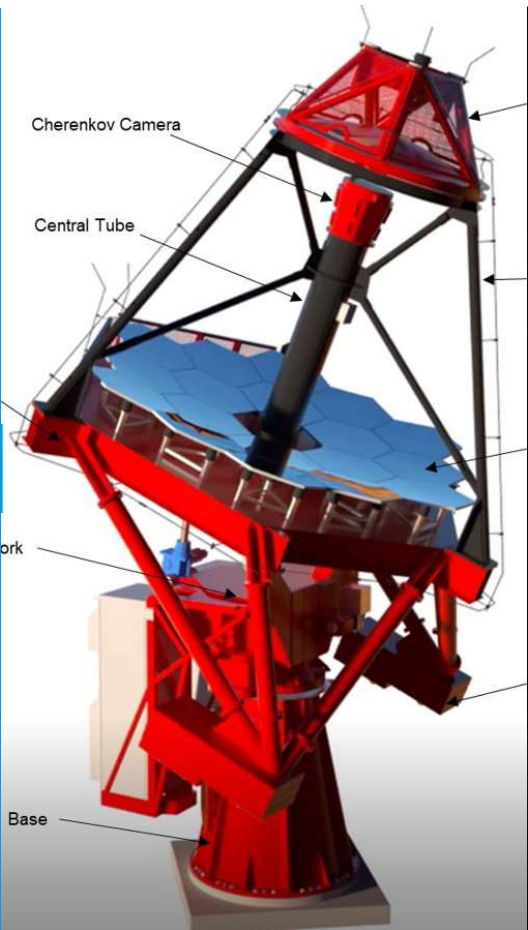
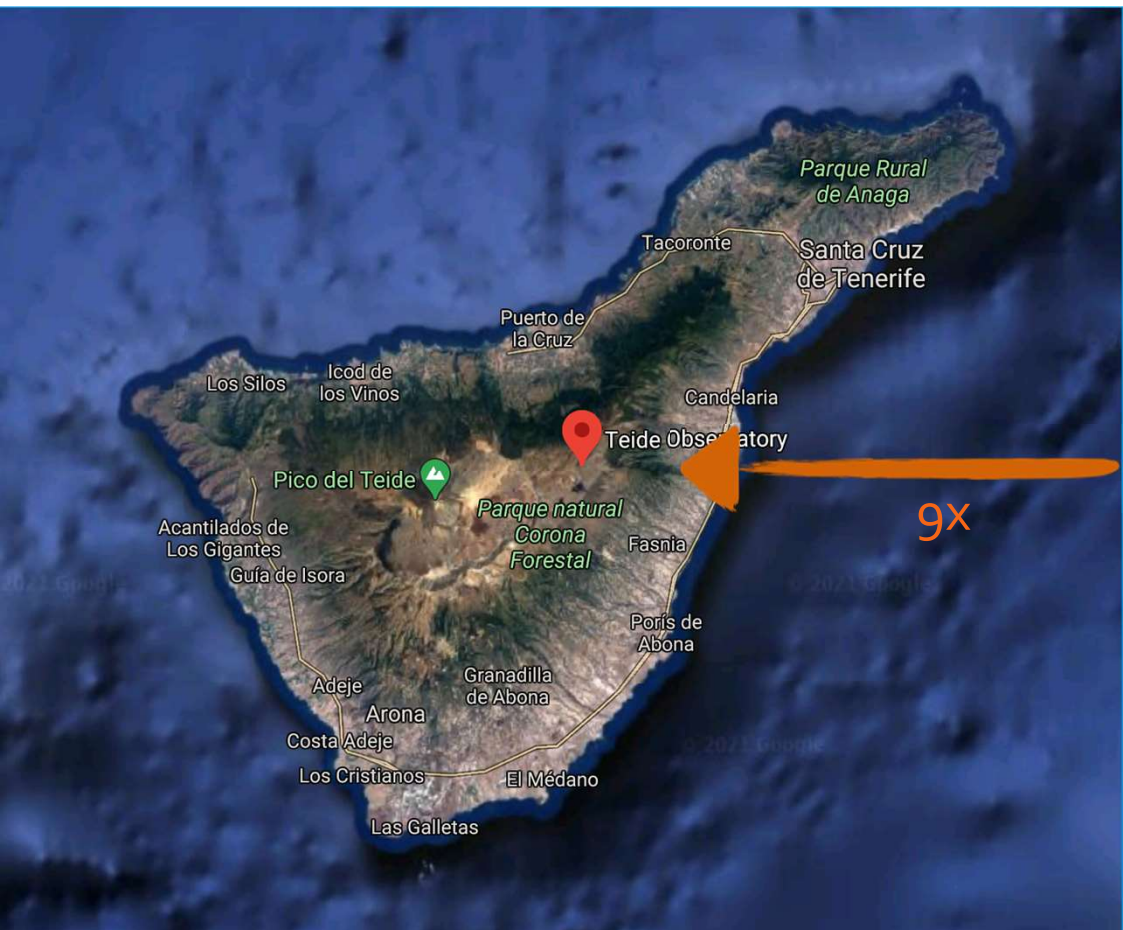
- Analisi Dati
- Applicazioni Machine Learning

TELESCOPI CERENKOV

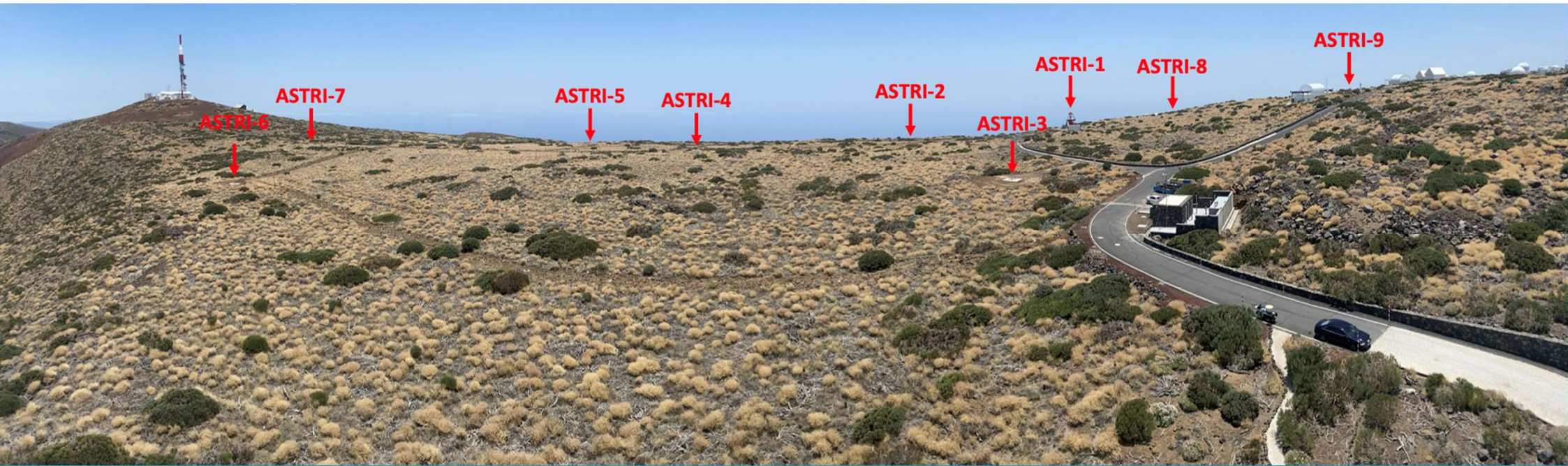
11



ASTRI MINI ARRAY



ASTRI MINI ARRAY



- Pointing Monitoring Camera
- Ricostruzione Eventi
- Controllo dei Telescopi
- Messa in Opera

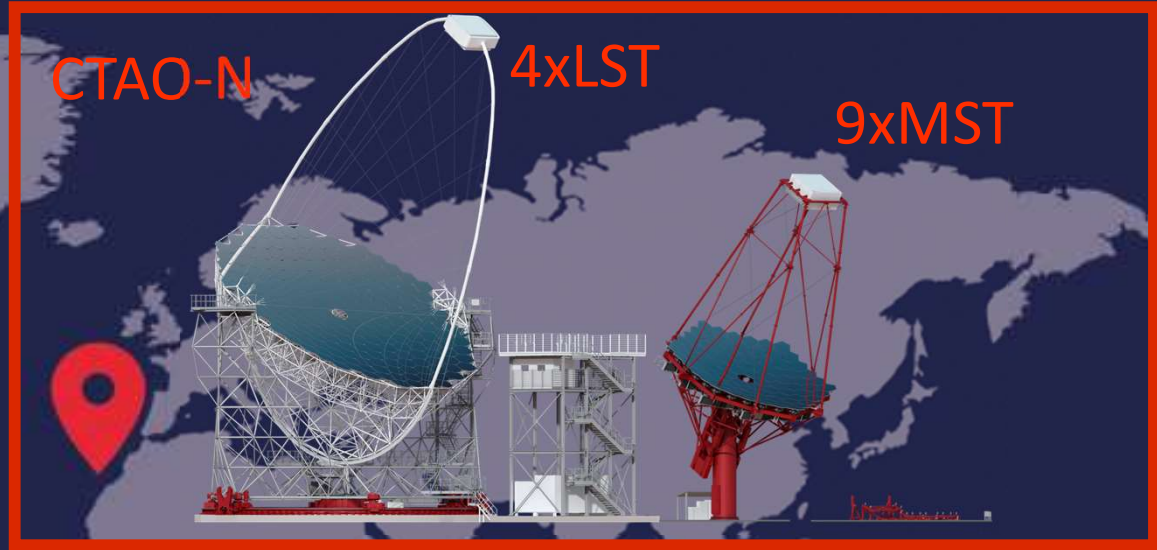
CTA



CTAO LOCATIONS

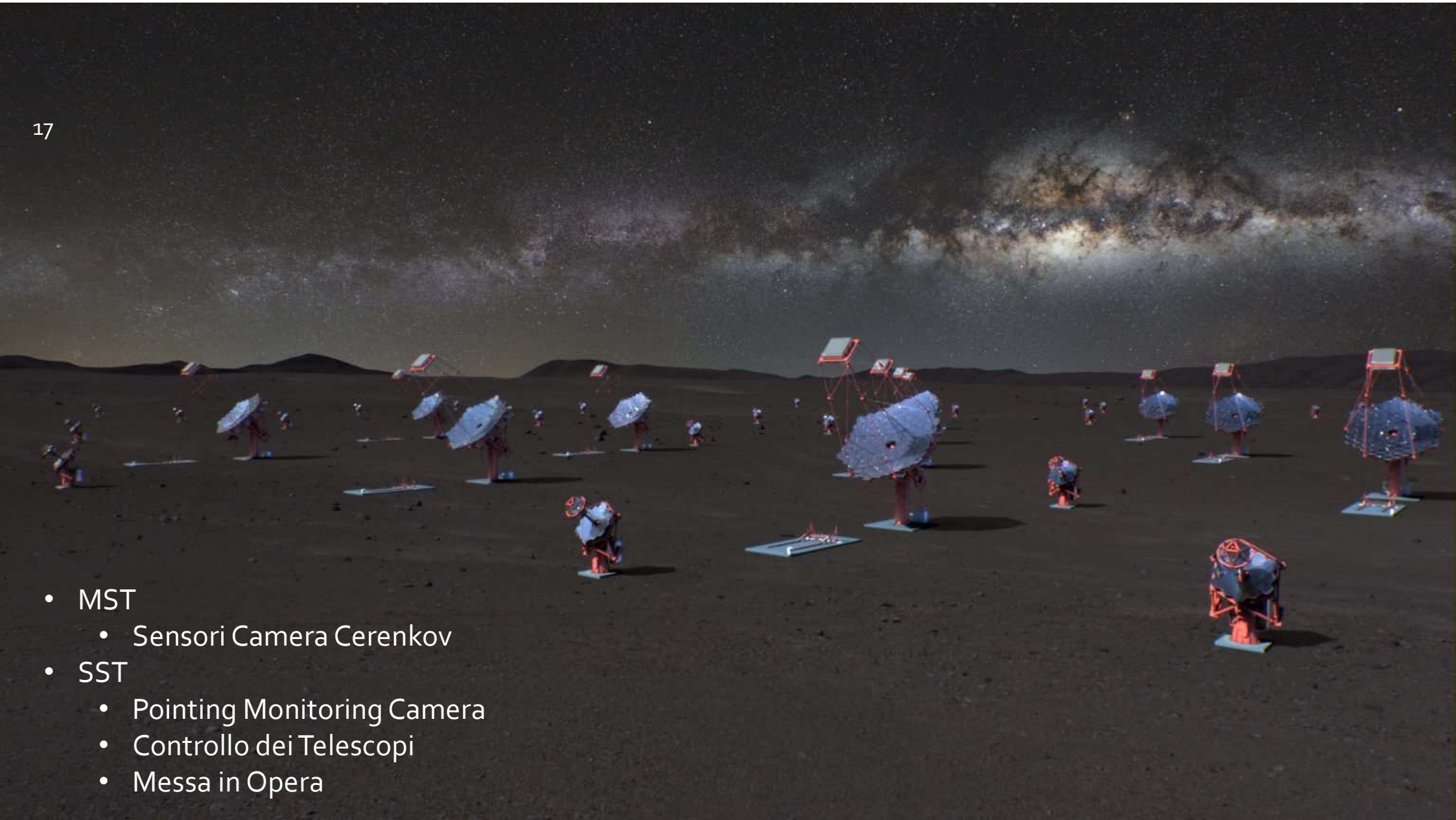
- Array Sites
- Headquarters
- Science Data Management Centre

CHERENKOV TELESCOPE ARRAY



PARANAL





- MST
 - Sensori Camera Cerenkov
- SST
 - Pointing Monitoring Camera
 - Controllo dei Telescopi
 - Messa in Opera

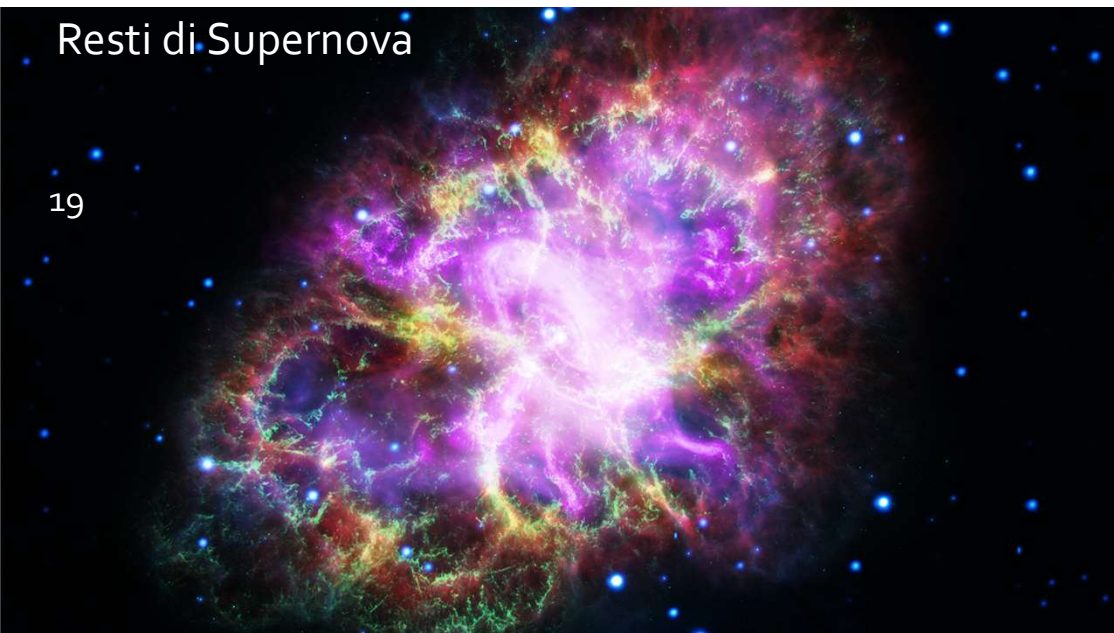
OSSERVATORIO DI COLOTI



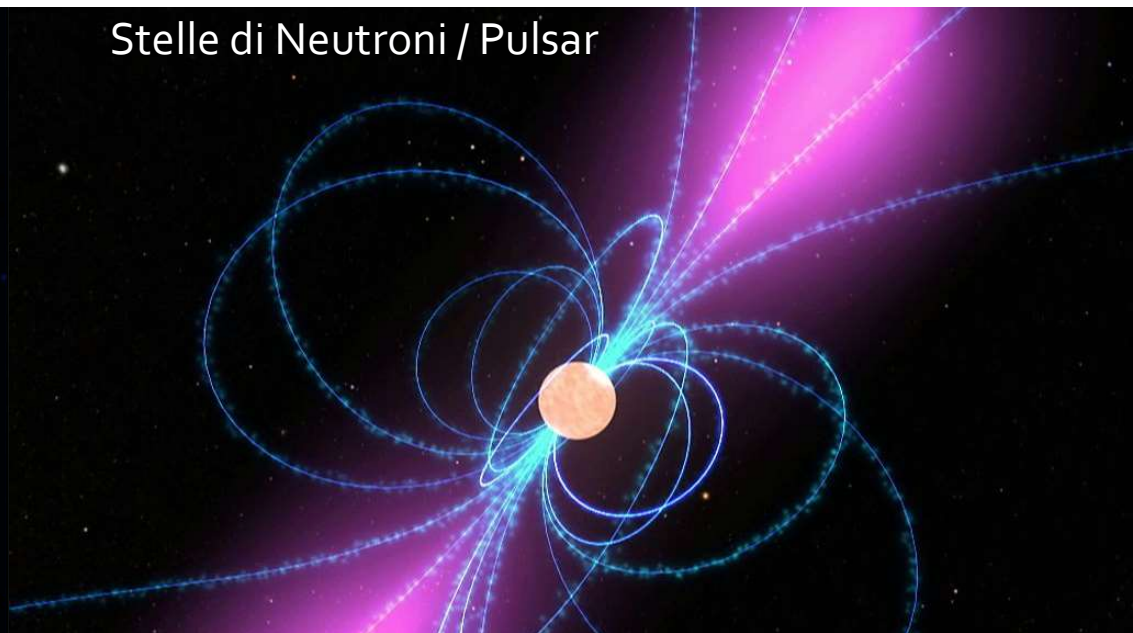
- MST
 - Aggiornamento
 - Remotizzazione
 - Ottimizzazione Analisi Dati
 - Follow-up eventi Multimessaggero

Resti di Supernova

19



Stelle di Neutroni / Pulsar



Gamma ray Burst



Nuclei Galattici Attivi



ATTIVITÀ DI TESI



Fermi

- Analisi Dati Sorgenti Astrofisiche.
- Sviluppo di Metodi di Machine Learning
- Identificazione Sorgenti
- Astrofisica multimessaggera: follow-up onde gravitazionali e neutrini cosmici di altissima energia



ASTRI/CTA

- Ottimizzazione Studio Sorgenti
- Ricostruzione/Analisi Eventi
- Messa in Opera Telescopi
- Studio/Caratterizzazione sensori SiPM



Coloti

- Messa in Opera
- Sviluppo Analisi Dati
- Osservazione e Analisi Dati