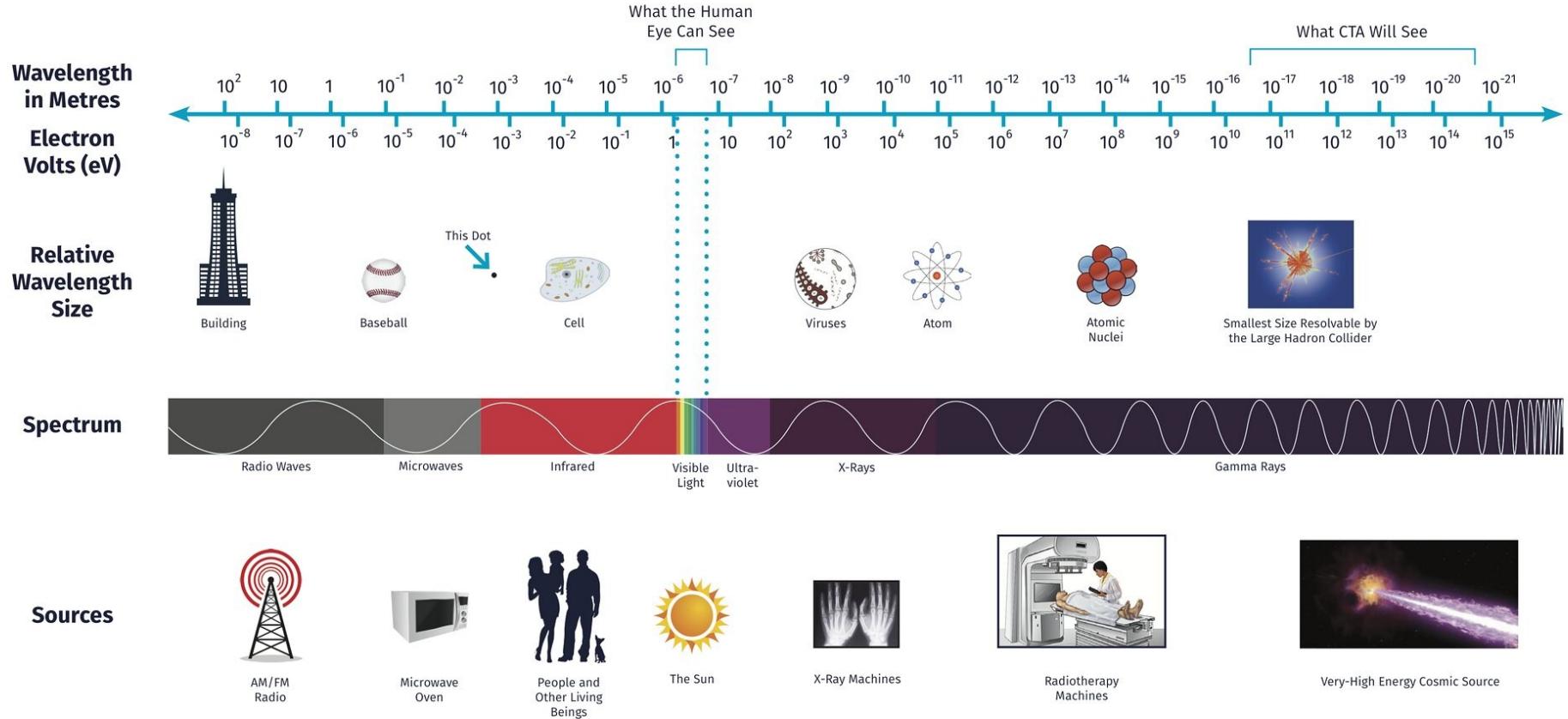


CTA ed i Raggi Gamma dal Cielo

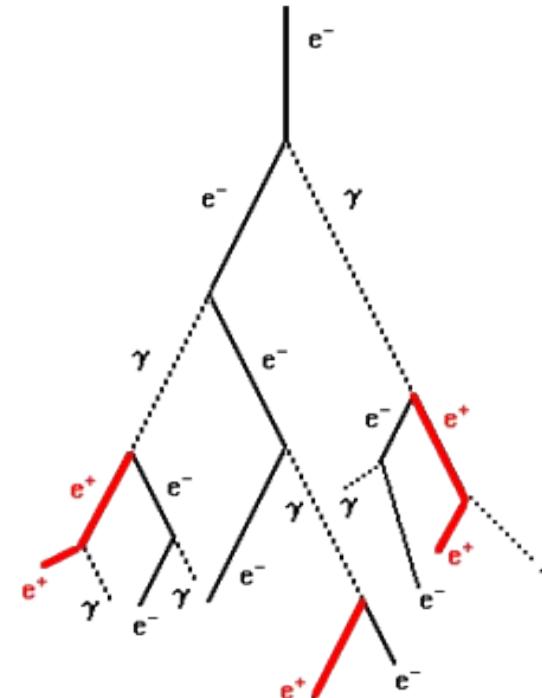
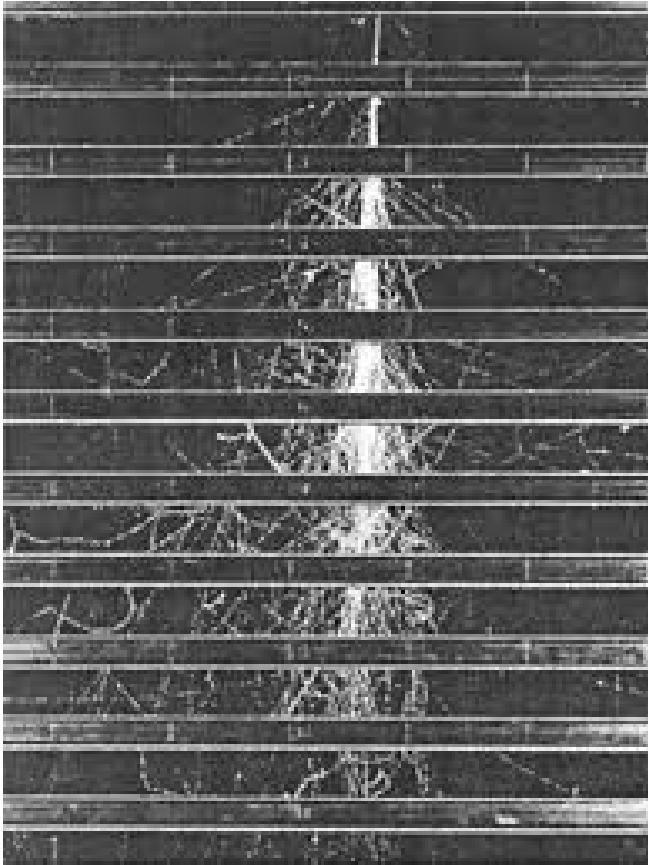




Cosa e' un raggio gamma? ...luce, ma con tanta energia

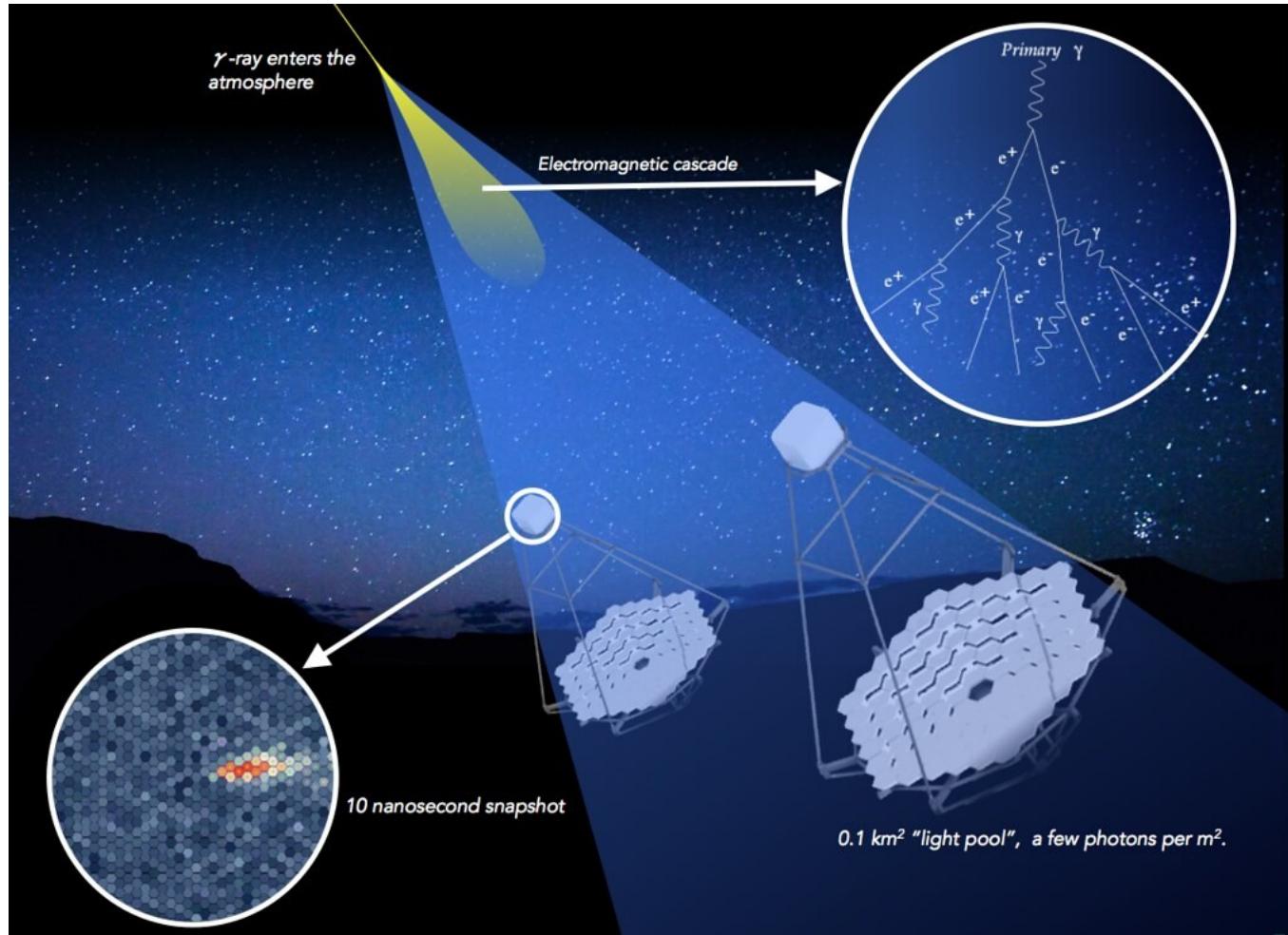
Image credits: Vecteezy.com, Dragonartz.net, NAOJ, NCI, CERN, NASA

Come osservare un raggio gamma

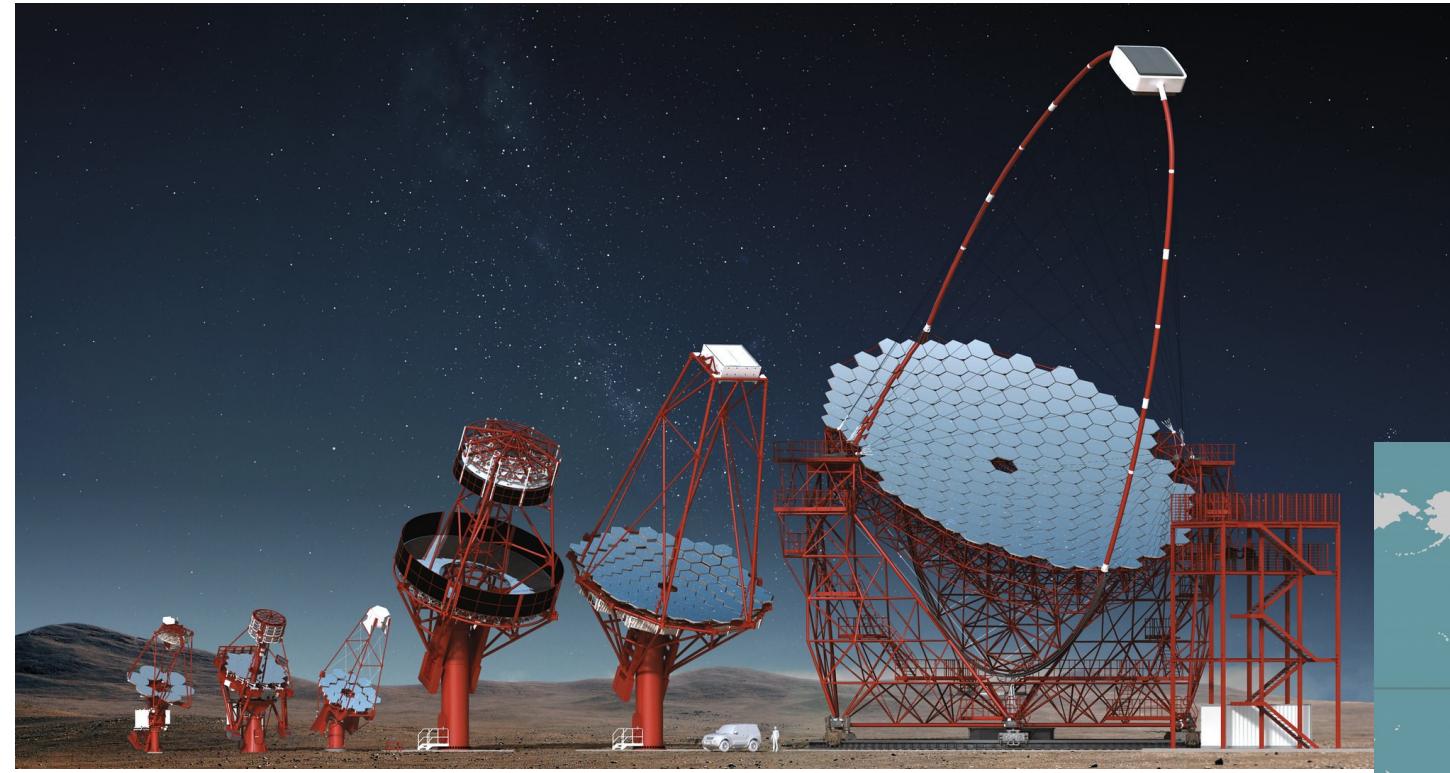


Particelle con molta energia possono produrre
un grande numero di particelle con minore energia

Osservare raggi gamma da terra



II Cherenkov Telescpes Array



Telescopi di tre grandezze, osservano energie basse, medie ed alte

Due siti per osservare tutto il cielo

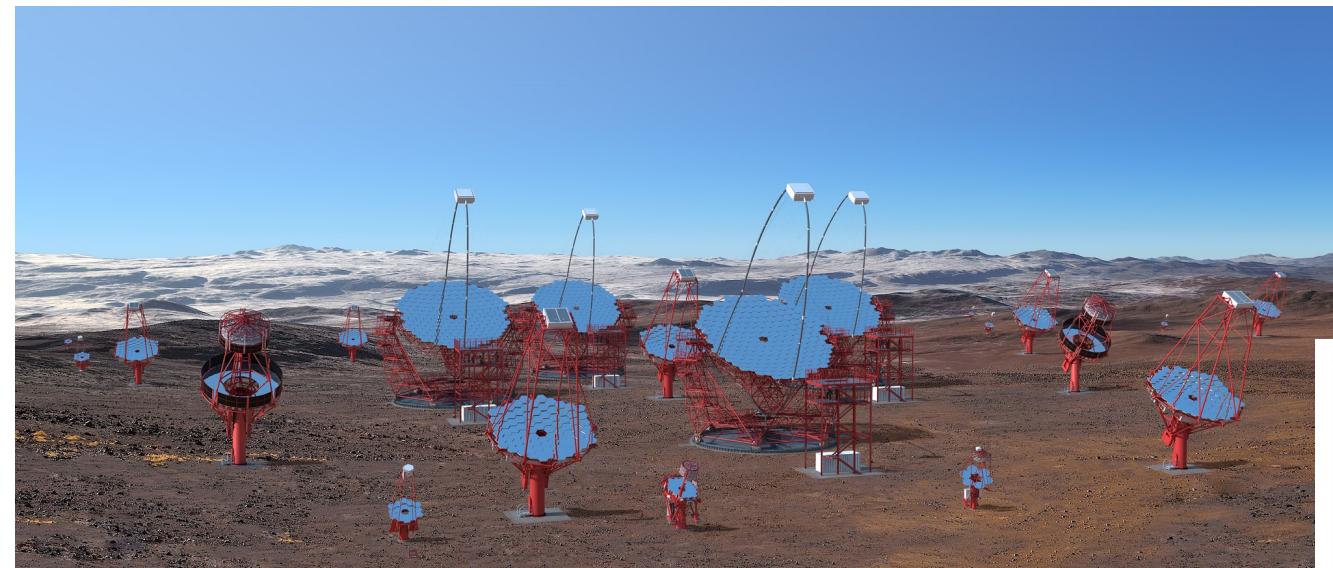


Il sito Sud : Atacama

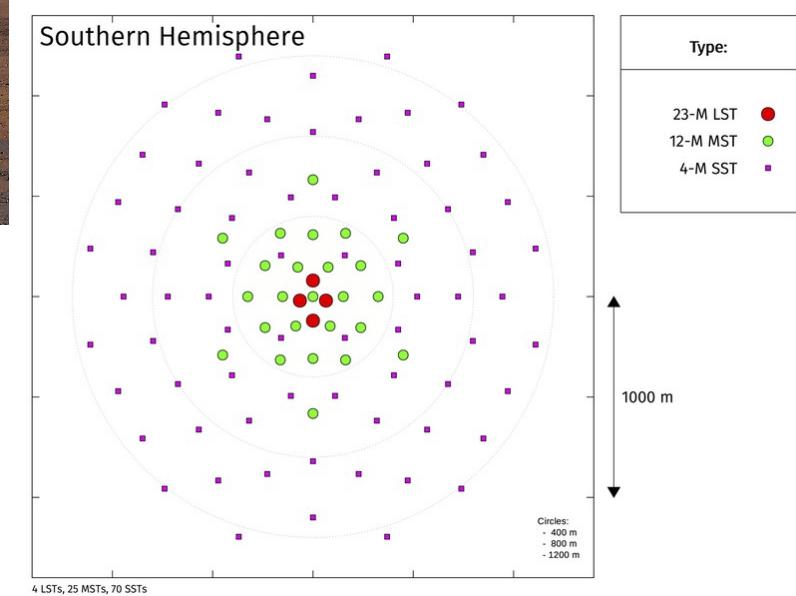


European Southern Observatory (ESO) Paranal site in Chile
Clima secco (deserto) e notevole altezza (da 2000 fino a 5000m)
sono ideali per osservazioni astronomiche

Il sito Sud : Atacama



Ottimo per osservare la Via Lattea

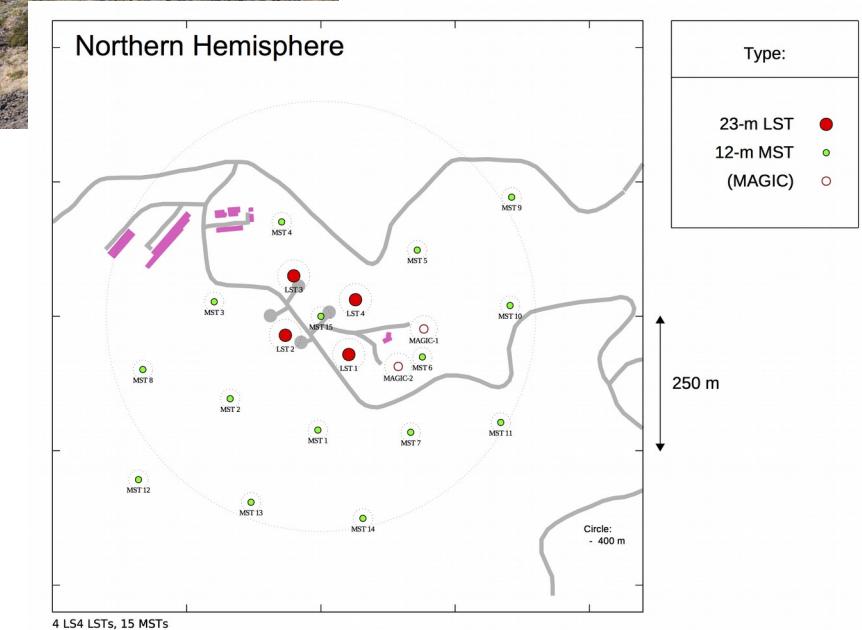


Il Sito Nord: La Palma



Osservatorio del Roque de los Muchachos, il principale osservatorio europeo nell'emisfero settentrionale

Il Sito Nord: La Palma



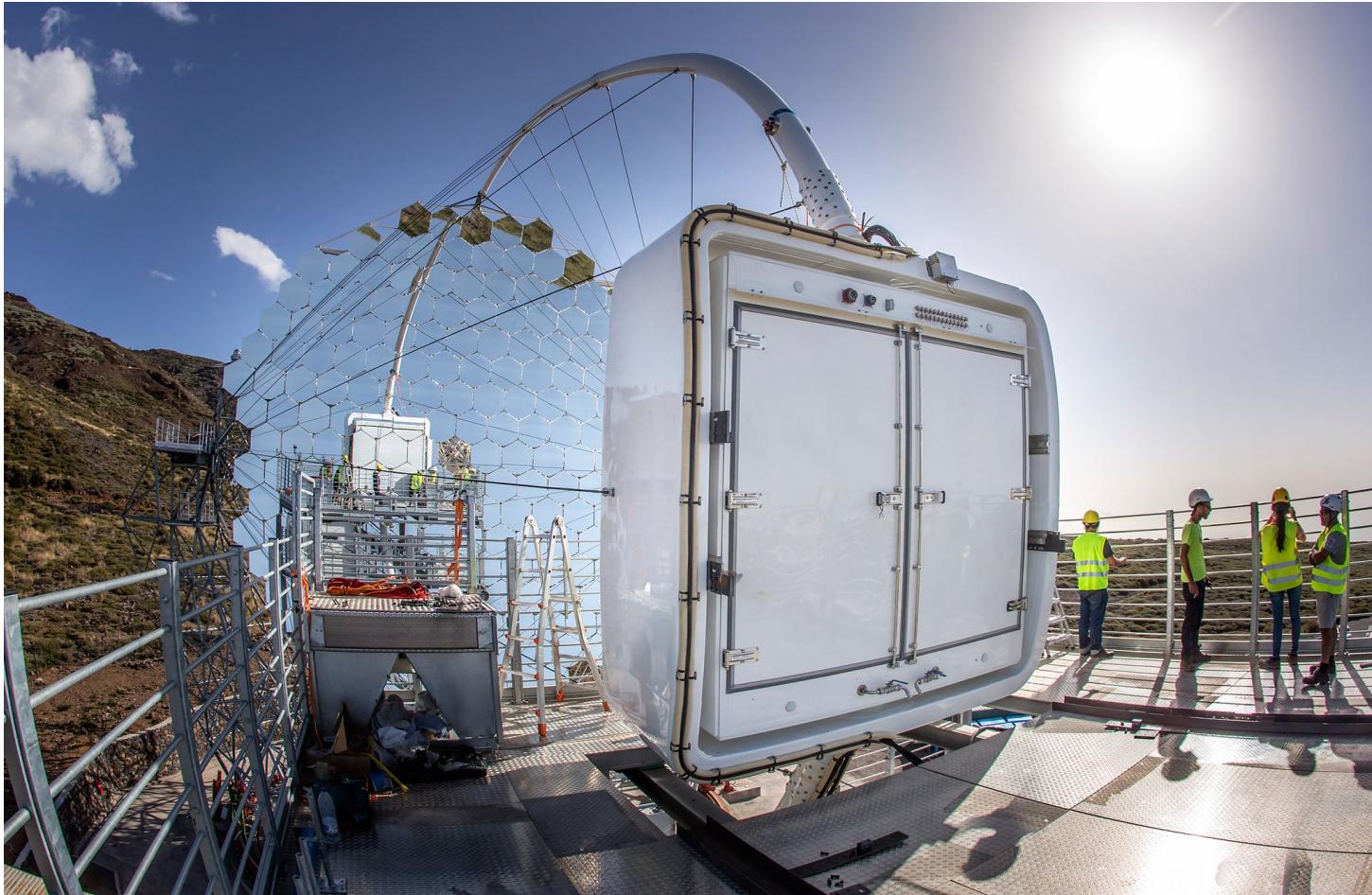
Ottimo per osservazione extra-galattiche

LST 1



23m di diametro, 100ton, rivela raggi gamma da 20GeV e può ruotare in 30sec

LST 1



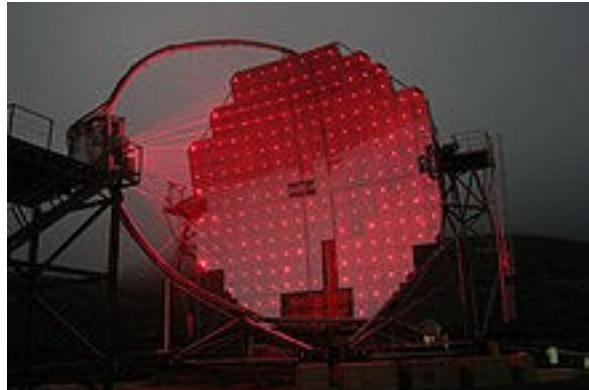
Grande e complesso. A breve altri tre a La Palma e 4 al sito sud

Un turno di Osservazione

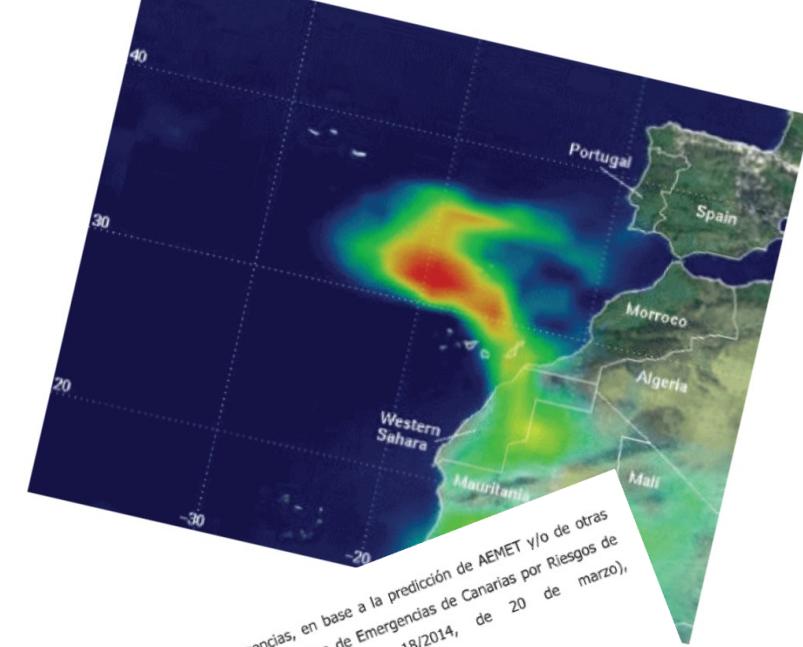
I telescopi Cherenkov sono strumenti complessi ed adoperarli è molto impegnativo (piena oscurità, condizioni ambientali perfette, risposta immediata a Transienti, etc..)

Gli astrofisici effettuano turni di osservazione di alcune settimane, recandosi presso il sito, lavorando di notte

Altri di giorno, controllano lo stato del rivelatore, la qualità dei dati ottengono i primi risultati, per fornire indicazioni per le osservazioni successive



Che tempo fa ?



La Dirección General de Seguridad y Emergencias, en base a la predicción de AEMET y/o de otras fuentes disponibles, y en aplicación del Plan Específico de Emergencias de Canarias por Riesgos de Fenómenos Meteorológicos Adversos PEfMA (Decreto 18/2014, de 20 de marzo),
DECLARA la situación de PREALERTA por:

VIENTOS

Ámbito territorial: El Hierro, La Palma, La Gomera, Tenerife y Gran Canaria
Observaciones: Viento alisio fuerte y racheado. Viento del nordeste, velocidad media 40 - 60 km/h y rachas máximas en predicción de 70 - 90 km/h. El viento más intenso afectará a los municipios del sureste y noroeste de las islas, y de forma general a las medianías, a las zonas altas, y a las cumbres. No son descartables algunas rachas puntuales superiores a las indicadas en la predicción.

Firmado: El Director Técnico de Guardia
Jorge Naranjo Borges

112
CANARIAS
P.D. El Coordinador Multisectorial
Fernando Galván Rodríguez

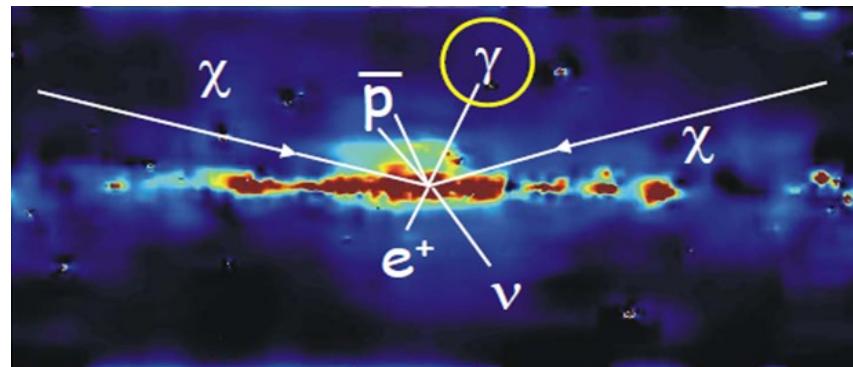
UN CIVIL Y ATENCIÓN DE EMERGENCIAS DE LA COMUNIDAD AUTÓNOMA DE CANARIAS
PARA LOS FENÓMENOS METEOROLÓGICOS ADVERSOS (PEfMA)

Cosa Osserviamo (la schedula)

I telescopi Cherenkov hanno un campo di vista (FOV) piccolo (4degX4deg) e devono essere puntati verso la sorgente.

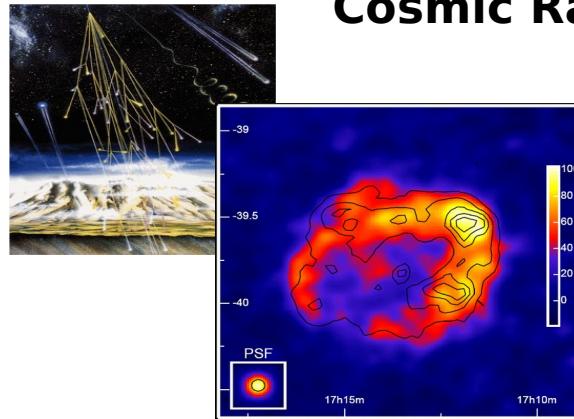
Le osservazioni sono proposte ogni anno a seguito di una “call”. Solo le migliori sono selezionate ed eseguite

Il programma di osservazione è studiato nel dettaglio



Dark Matter Search (Discovery)

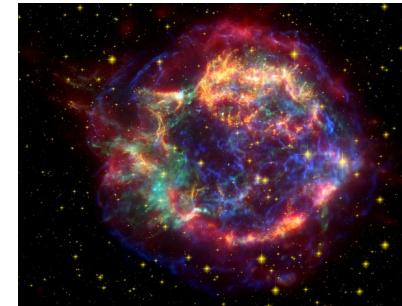
Cosmic Ray Origin



Super Massive Black Holes



Gamma-Ray Bursts



Osservazione a Sorpresa: i Transienti

**First-time detection of VHE
gamma rays by MAGIC from a
direction consistent with the
recent EHE neutrino event
IceCube-170922A**

ATel #10817; Razmik Mirzoyan for the MAGIC Collaboration

on 4 Oct 2017; 17:17 UT

After the IceCube neutrino event EHE 170922A detected on 22/09/2017 (GCN circular #[21916](#)), Fermi-LAT measured enhanced gamma-ray emission from the blazar TXS 0506+056 (05 09 25.96370, +05 41 35.3279 (J2000), [Lani et al., Astron. J., 139, 1695-1712 (2010)]). MAGIC observed this source under good weather conditions and a 5 sigma detection (ATel #[10791](#)). MAGIC observed this source under good weather conditions and a 5 sigma detection above 100 GeV was achieved after 12 h of observations from September 28th till October 3rd. This is the first time that VHE gamma rays are measured from a direction consistent with a detected neutrino event. Several follow up observations from other observatories have been reported in ATels: #[10773](#), #[10787](#), #[10791](#), #[10792](#), #[10794](#), #[10799](#), #[10801](#), GCN: #[21941](#), #[21930](#), #[21924](#), #[21923](#), #[21917](#), #[21916](#). The MAGIC contact persons for these observations are R. Mirzoyan (Razmik.Mirzoyan@mpp.mpg.de) E. Bernardini (elisa.bernardini@desy.de), K.Satalecka (konstancja.satalecka@desy.de). MAGIC is a system of two 17-m-diameter Imaging Atmospheric Cherenkov Telescopes located at the Observatory Roque de los Muchachos on the Canary Island La Palma, Spain, and designed to perform gamma-ray astronomy in the energy range from 50 GeV to greater than 50 TeV.

**First time detection of a GRB at
sub-TeV energies; MAGIC detects
the GRB 190114C**

ATel #12390; Razmik Mirzoyan on behalf of the MAGIC Collaboration
on 15 Jan 2019; 01:03 UT

The MAGIC telescopes performed a rapid follow-up observation of GRB 190114C (Gropp et al., GCN 23688; Tyurina et al., GCN 23690, de Ugarte Postigo et al., GCN 23692, Lipunov et al. GCN 23693, Selsing et al. GCN 23695). This observation was triggered by the Swift-BAT alert; we started observing at about 50s after Swift T0: 20:57:03.19. The MAGIC real-time analysis shows a significance >20 sigma in the first 20 min of observations (starting at T0+50s) for energies >300GeV. The relatively high detection threshold is due to the large zenith angle of observations (>60 degrees) and the presence of partial Moon. Given the brightness of the event, MAGIC will continue the observation of GRB 190114C until it is observable tonight and also in the next days. We strongly encourage follow-up observations by other instruments. The MAGIC contact persons for these observations are R. Mirzoyan (Razmik.Mirzoyan@mpp.mpg.de) and K. Noda (nodak@icrr.uo.ac.jp). MAGIC is a system of two 17-m-diameter Imaging Atmospheric Cherenkov Telescopes located at the Observatory Roque de los Muchachos on the Canary island La Palma, Spain, and designed to perform gamma-ray astronomy in the energy range from 50 GeV to greater than 50 TeV.

Osservazione a Sorpresa: i Transienti

<https://www.youtube.com/watch?v=Mkb3qRasxUg>

Saluti dal Roque

