

Affreschi cosmici

Dott.ssa Elisabetta Bissaldi

Dipartimento Interateneo di Fisica — Politecnico e INFN Bari





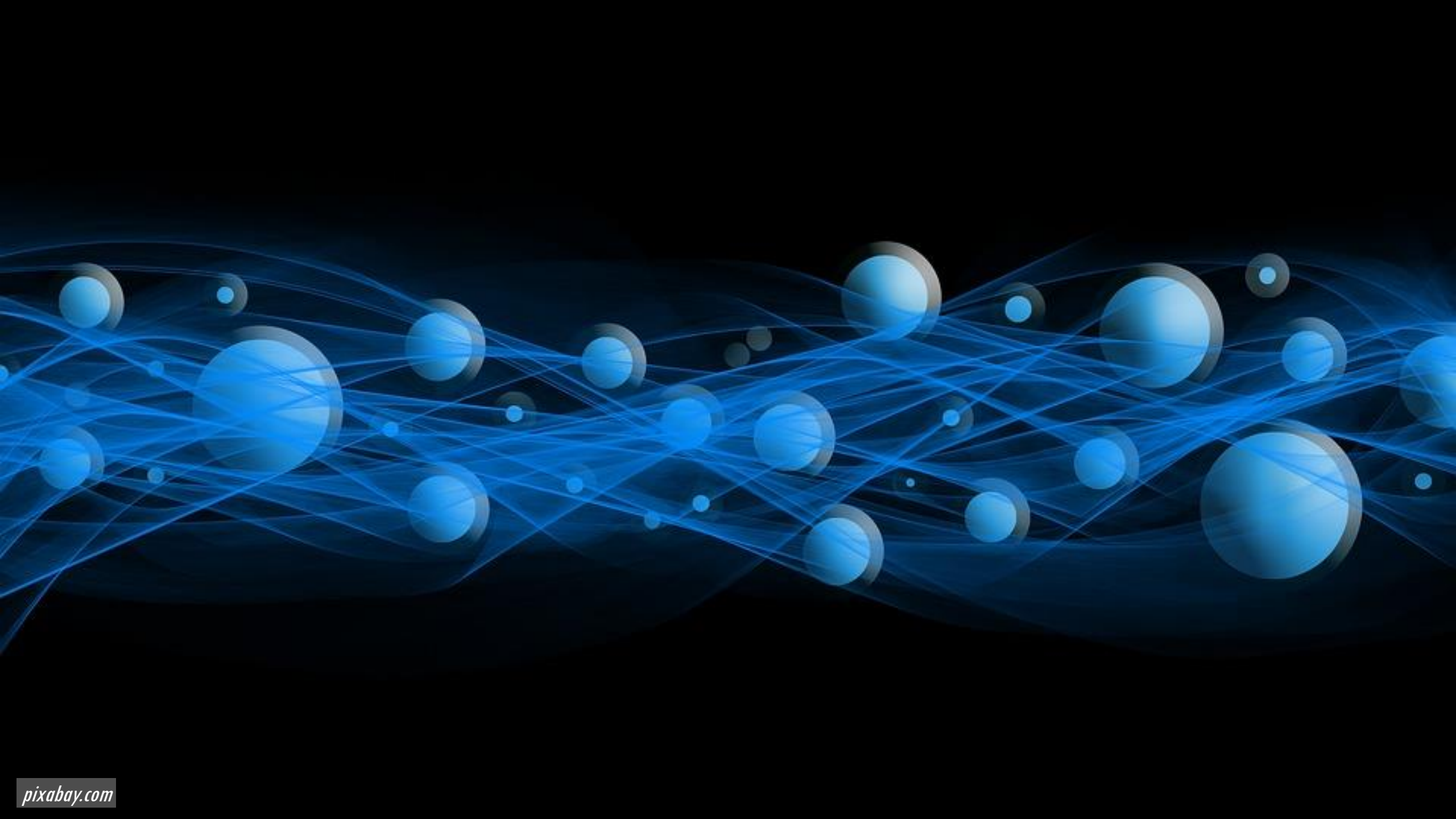
Credit: ESA/Hubble & NASA, RELICS

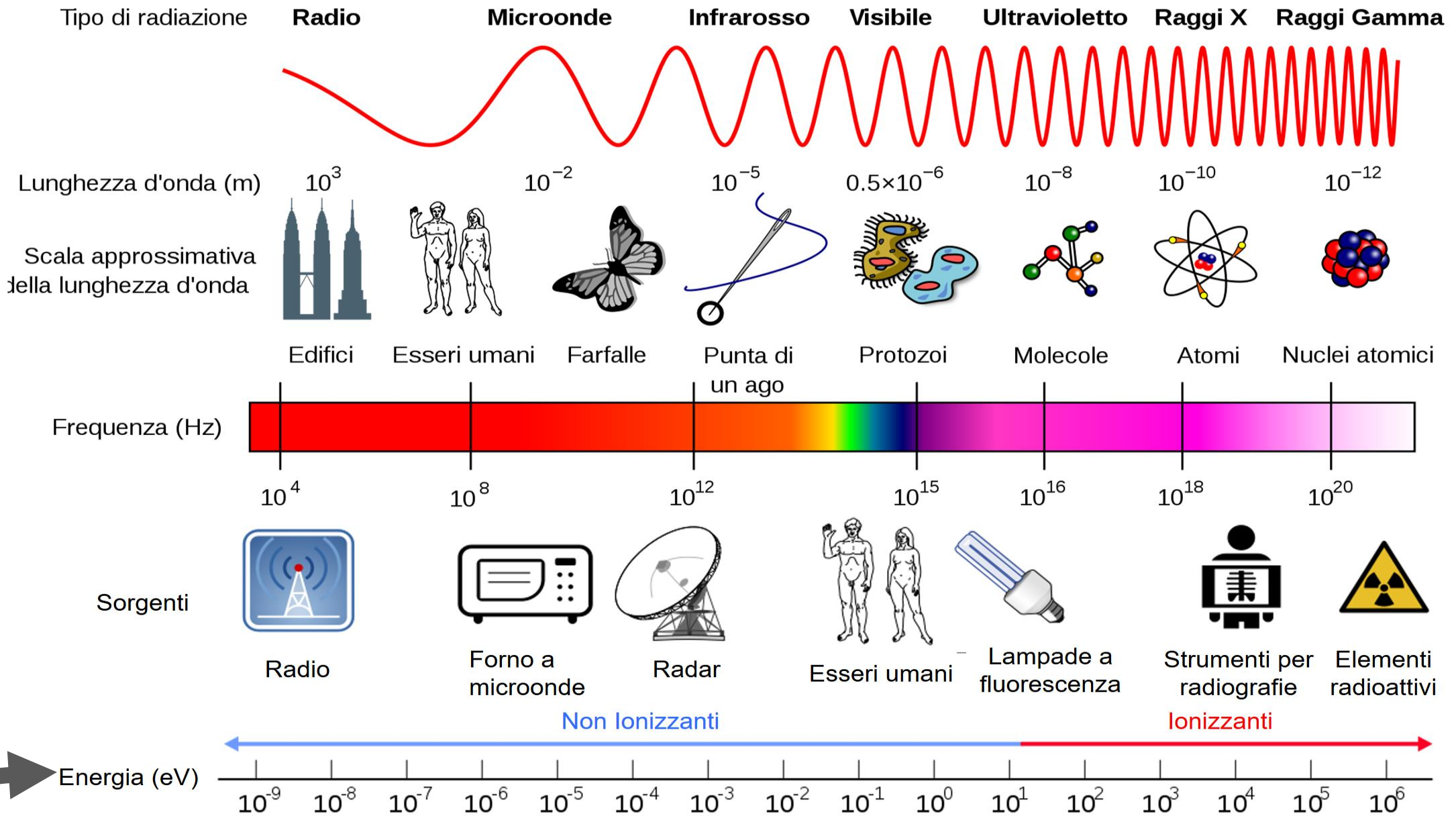
La Radiazione Elettromagnetica





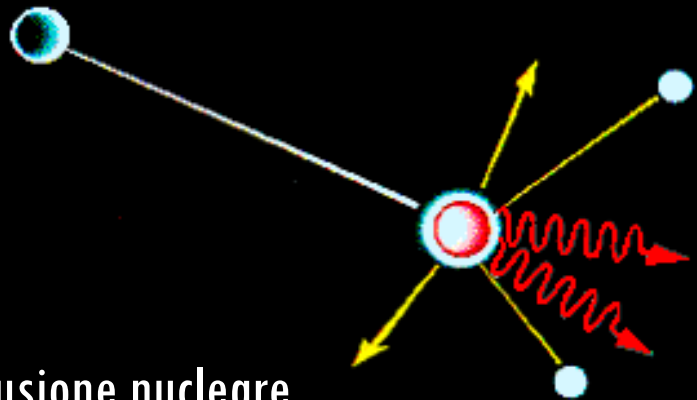
Credit: Seb Janiak



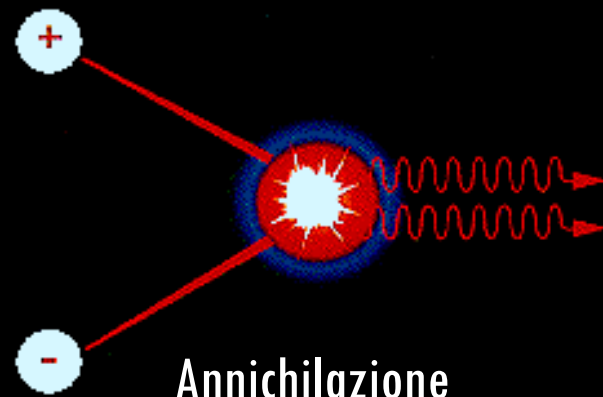


Un elettronvolt (eV) è un'unità di misura dell'energia molto usata in ambito atomico e subatomico





Fusione nucleare



Annichilazione
elettrone-positrone

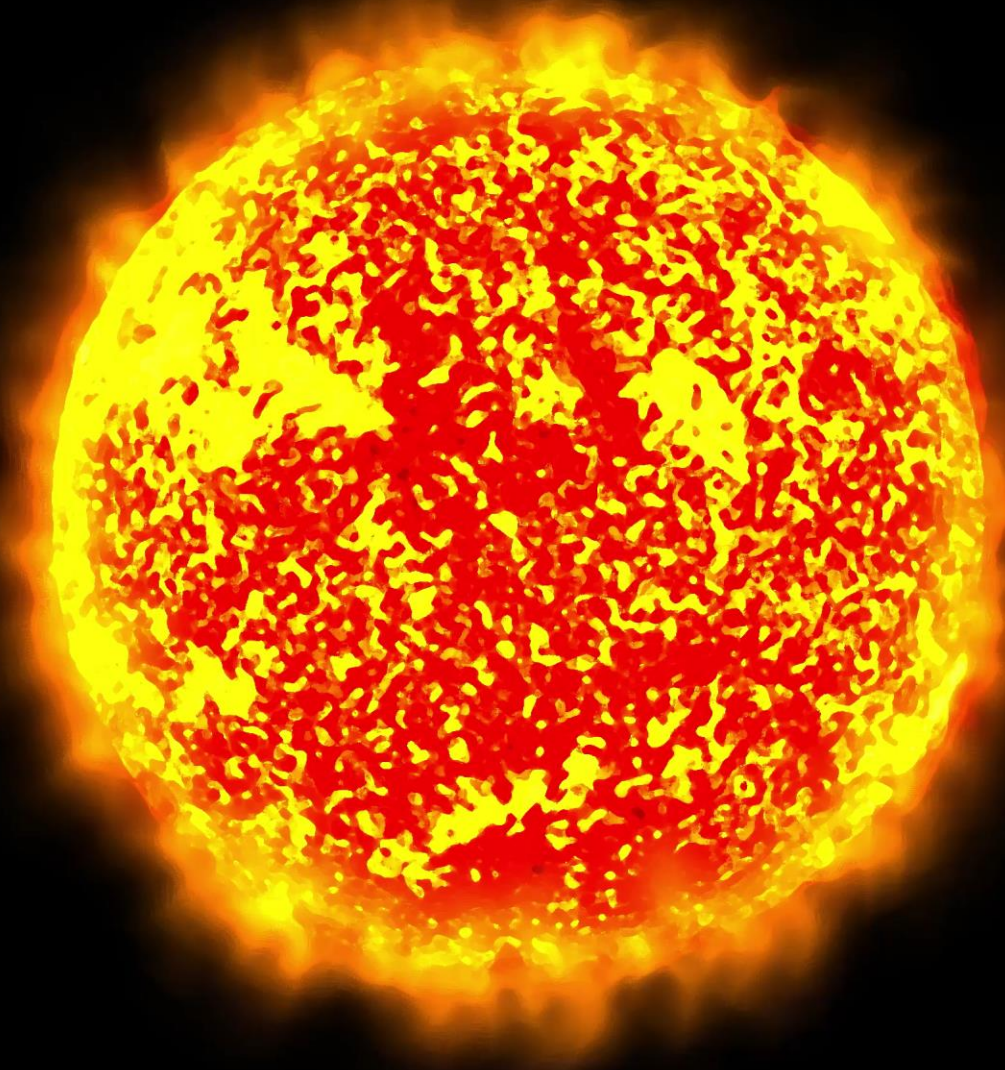


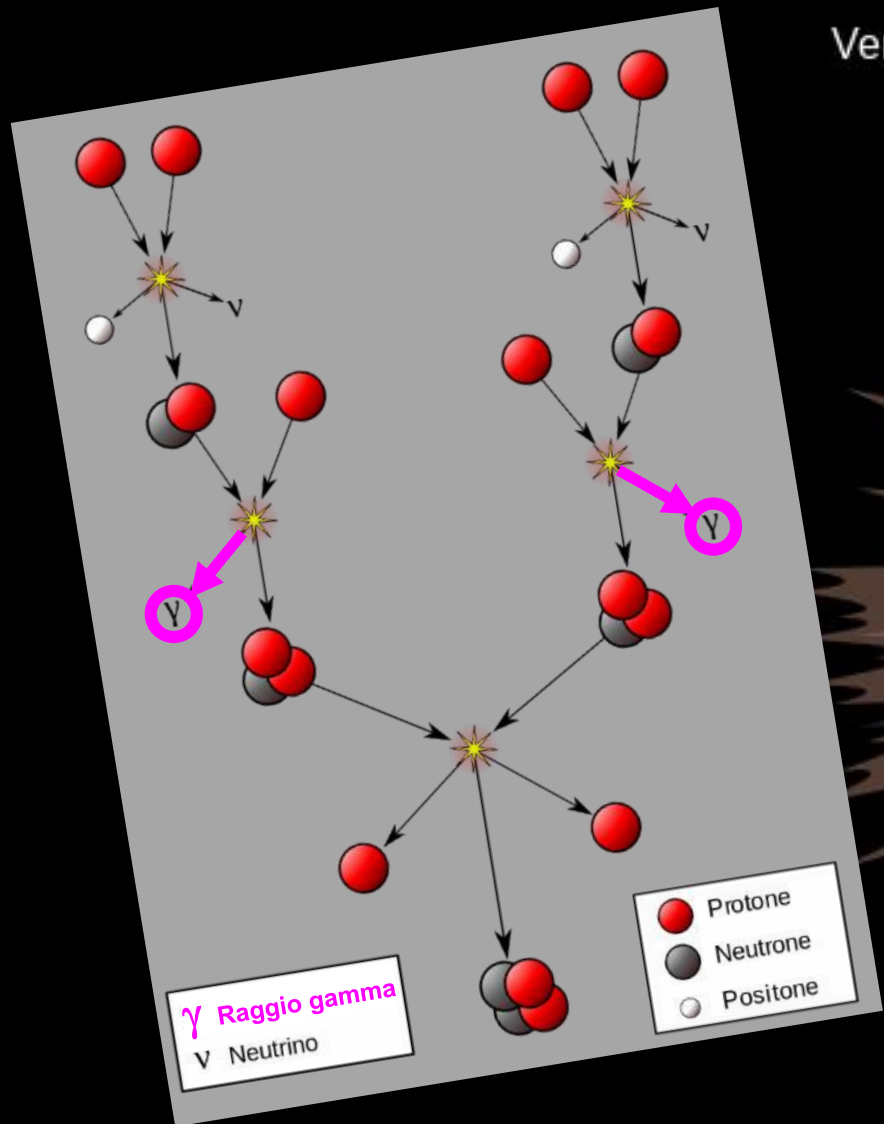
Decadimenti nucleari gamma

Accelerazione di particelle
cariche (Bremsstrahlung,
Sincrotrone, Compton)

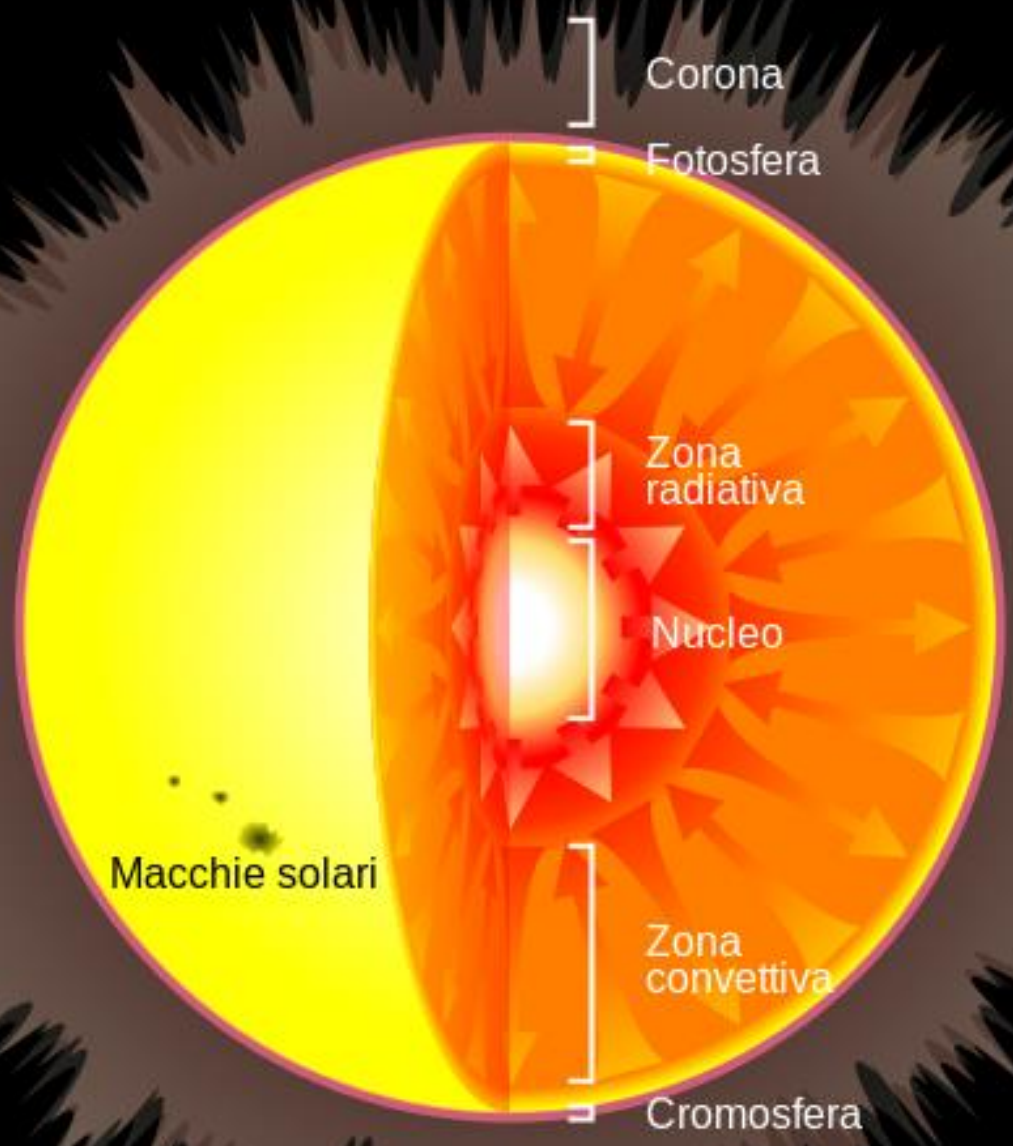


Rappresentazione artistica



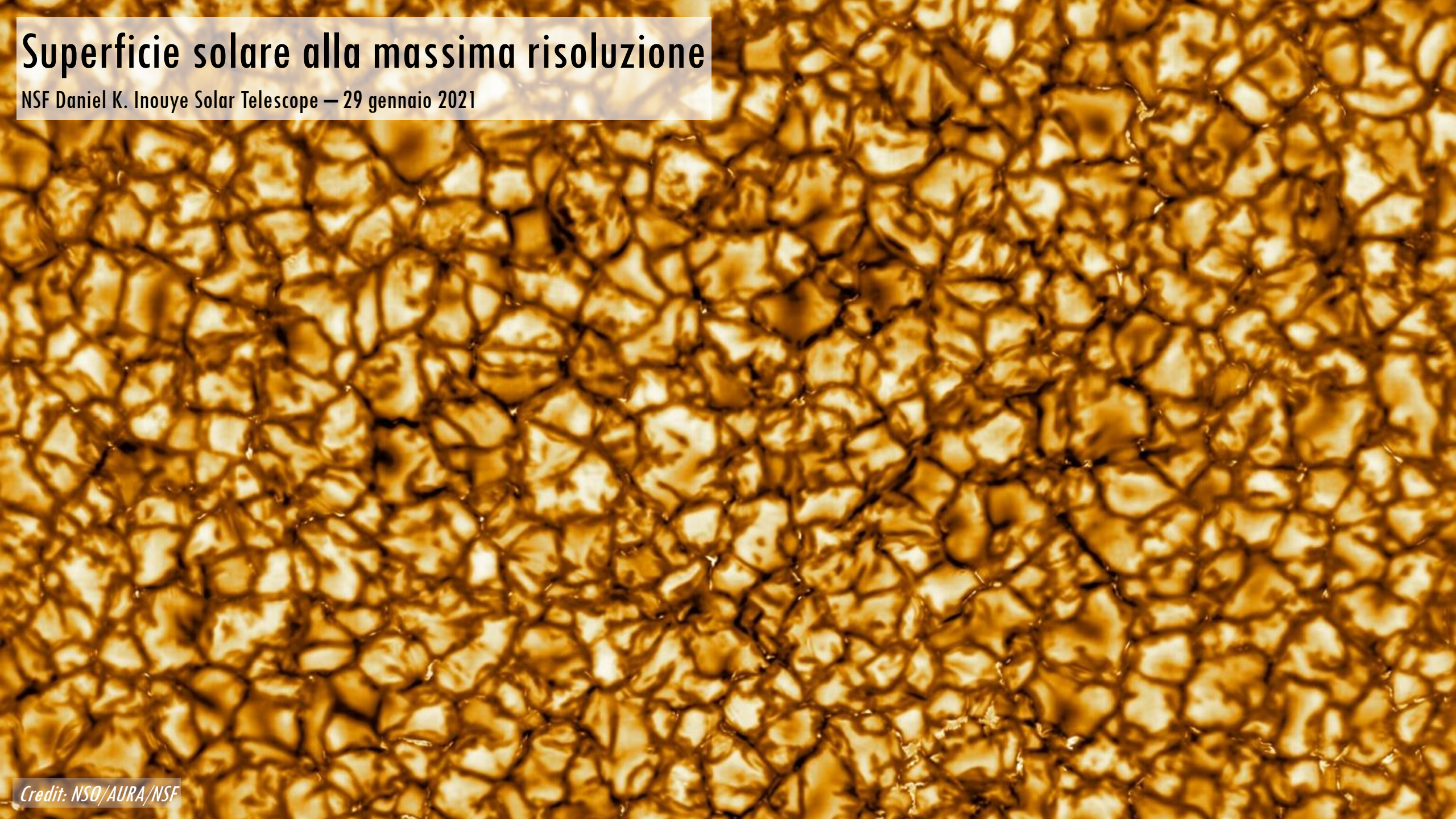


Vento solare



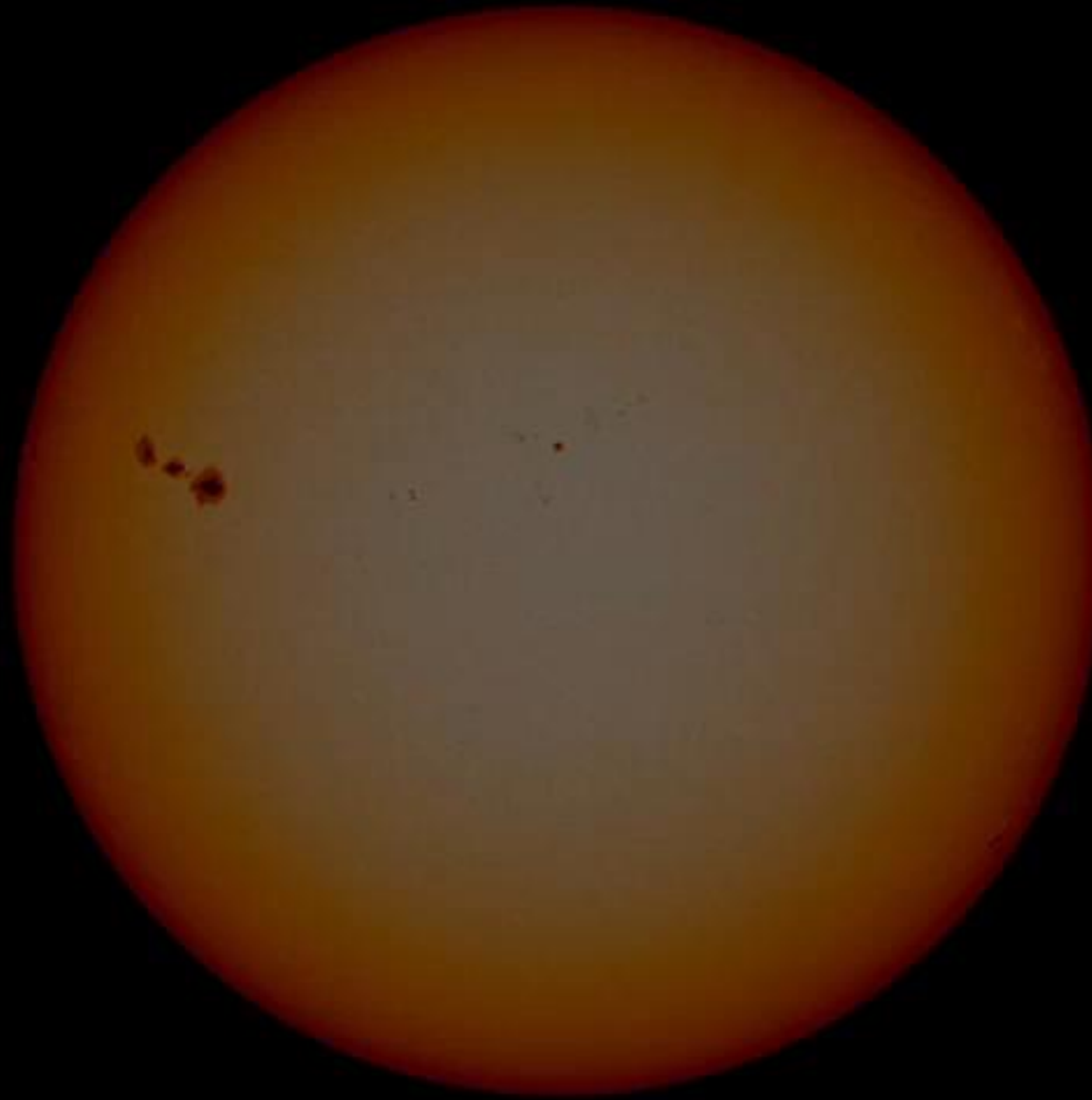
Superficie solare alla massima risoluzione

NSF Daniel K. Inouye Solar Telescope — 29 gennaio 2021



Credit: NSO/AURA/NSF

Jewel Box Sun



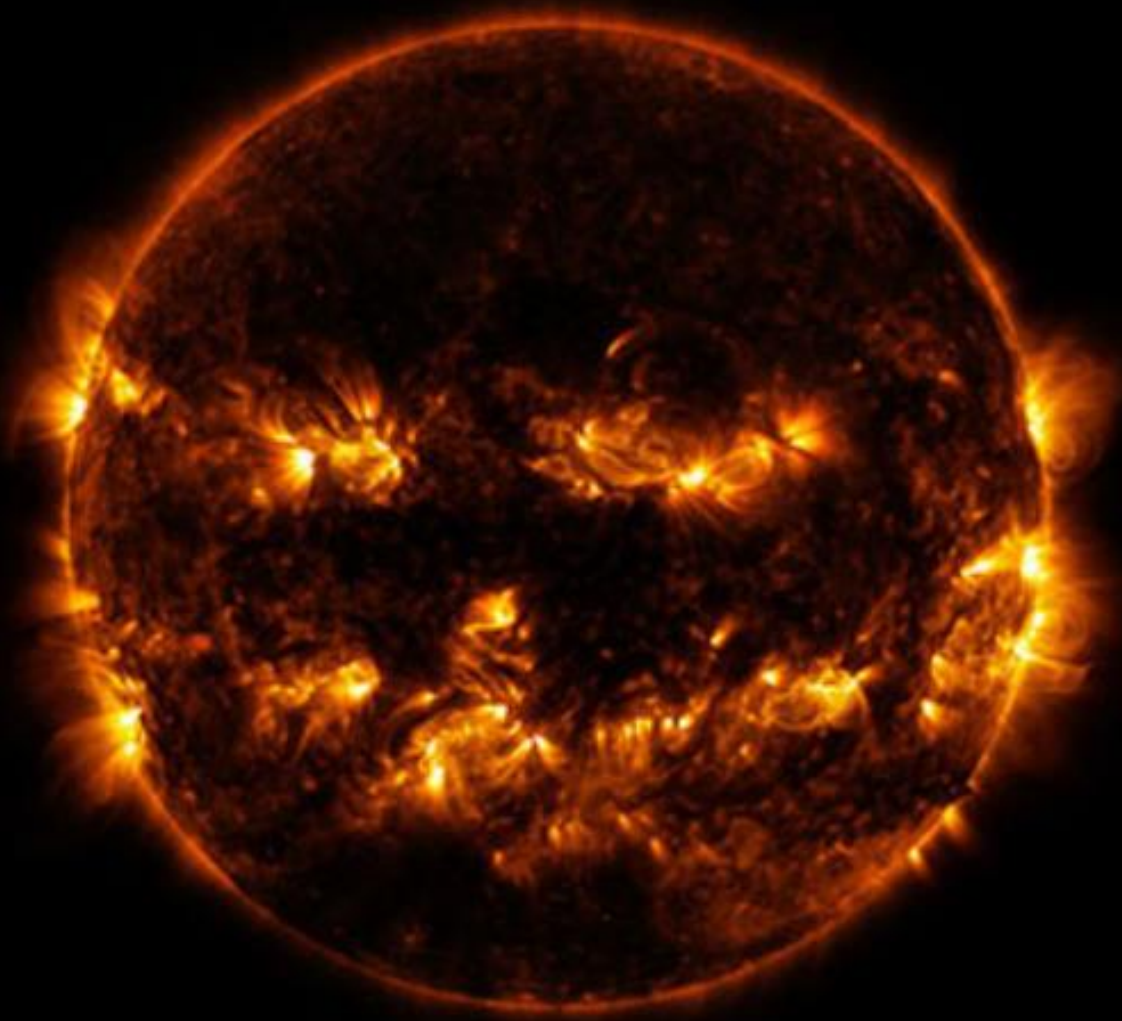
NASA Goddard Media Studios

<https://www.youtube.com/watch?v=kS57VH3QN1g>

<http://svs.gsfc.nasa.gov/goto?11385>

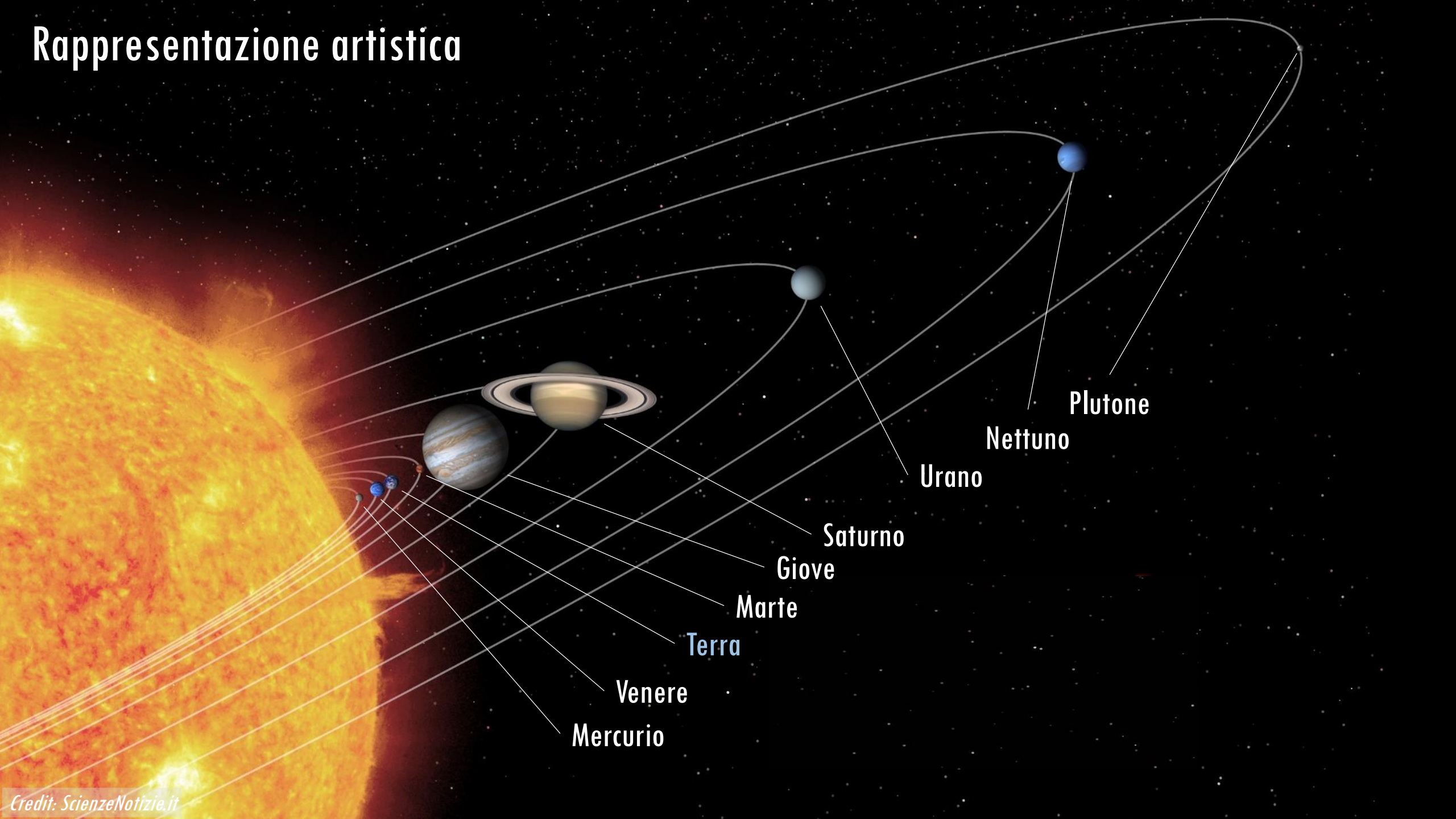
Regioni solari attive

Solar Dynamics Observatory — 8 ottobre 2014



«Our Halloween Sun»

Rappresentazione artistica



Mercurio

Venere

Terra

Marte

Giove

Saturno

Urano

Nettuno

Plutone

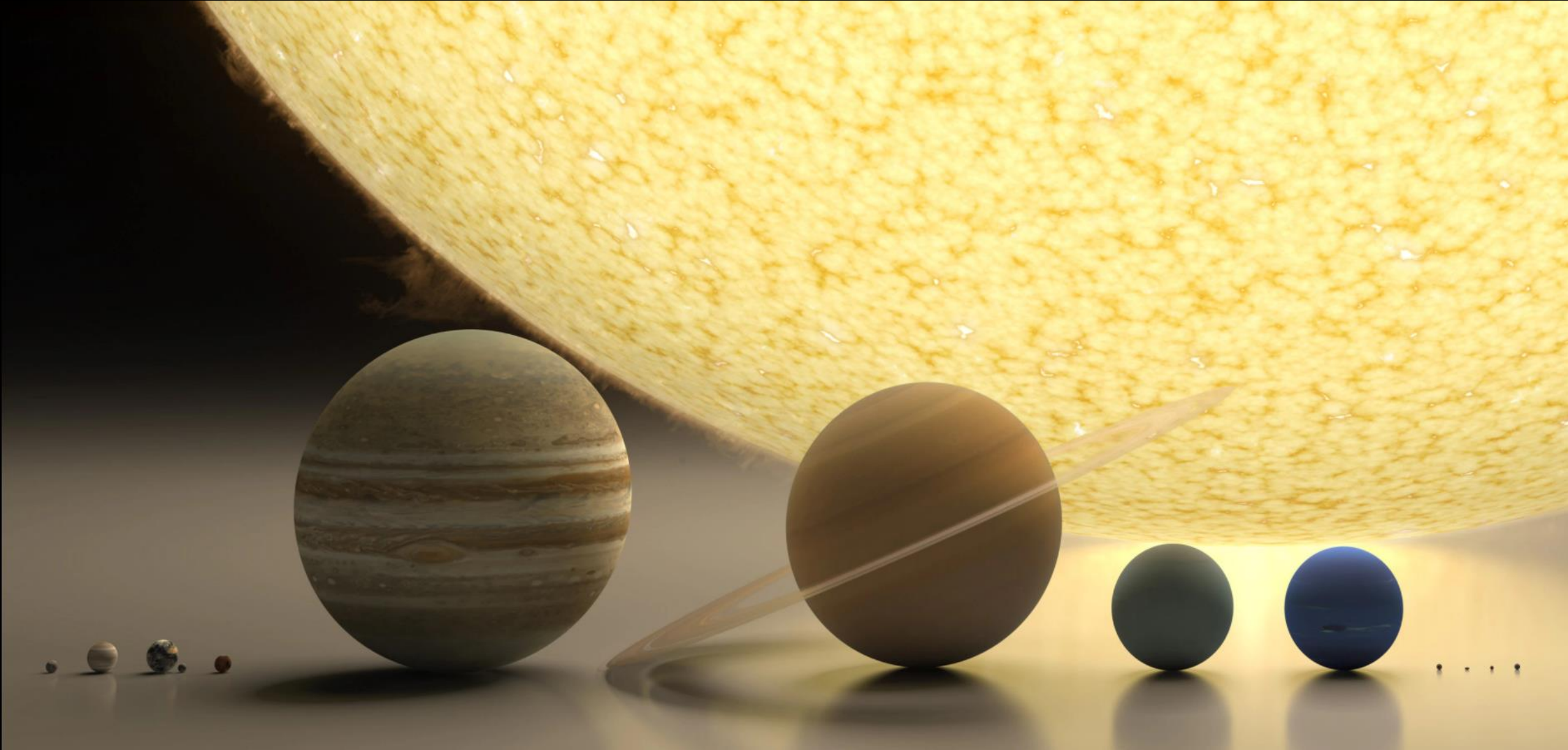
Eruzione solare

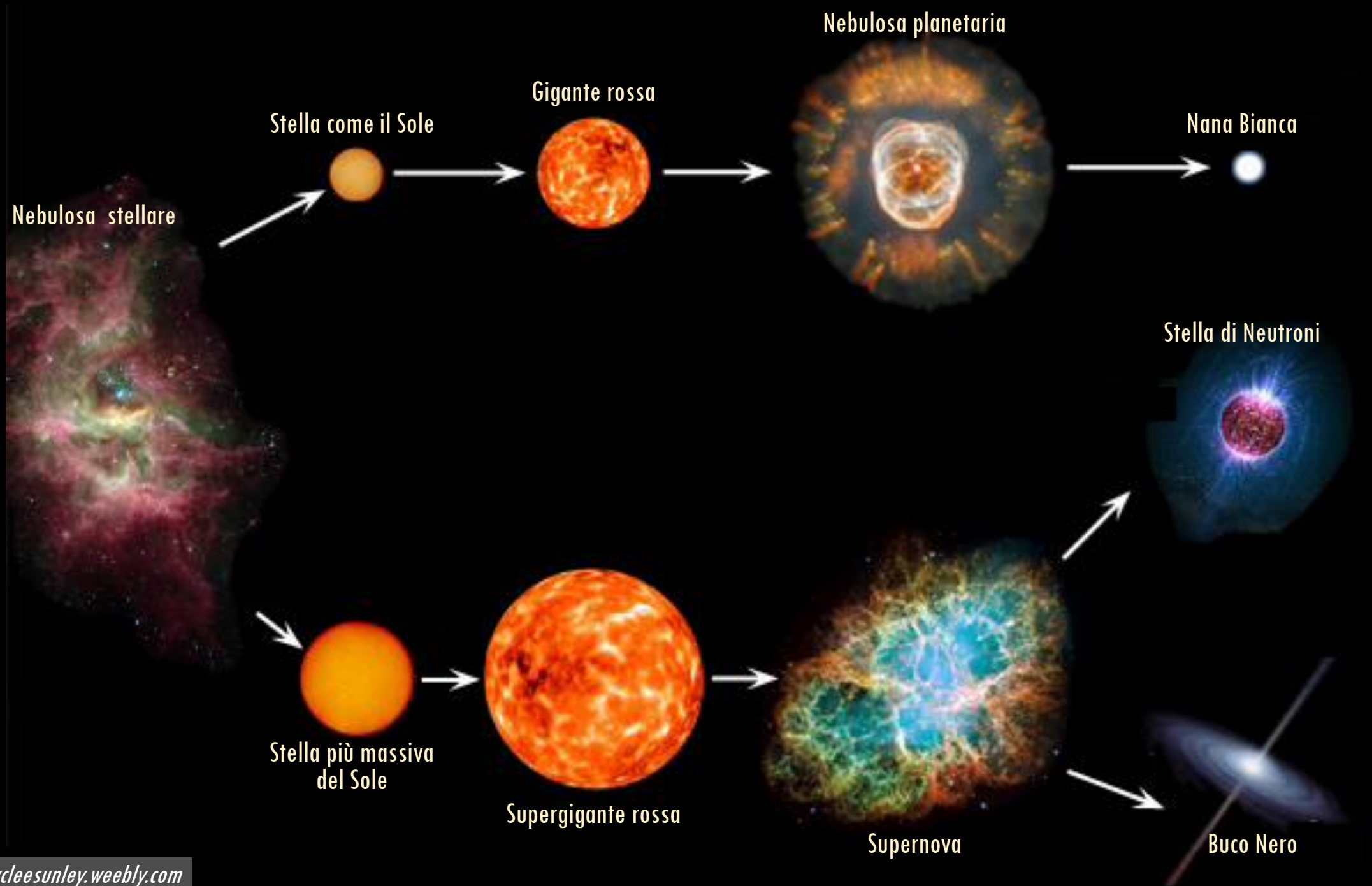
Solar and Heliospheric Observatory (SOHO) – 27 luglio 1999

Earth shown
for size comparison



Installazione artistica





Hubble visto dallo Space Shuttle Discovery

Febbraio 1997 — In orbita dal 1990



I Pilastrini della Creazione della Nebulosa Aquila



Visible . WFC3 . 2015



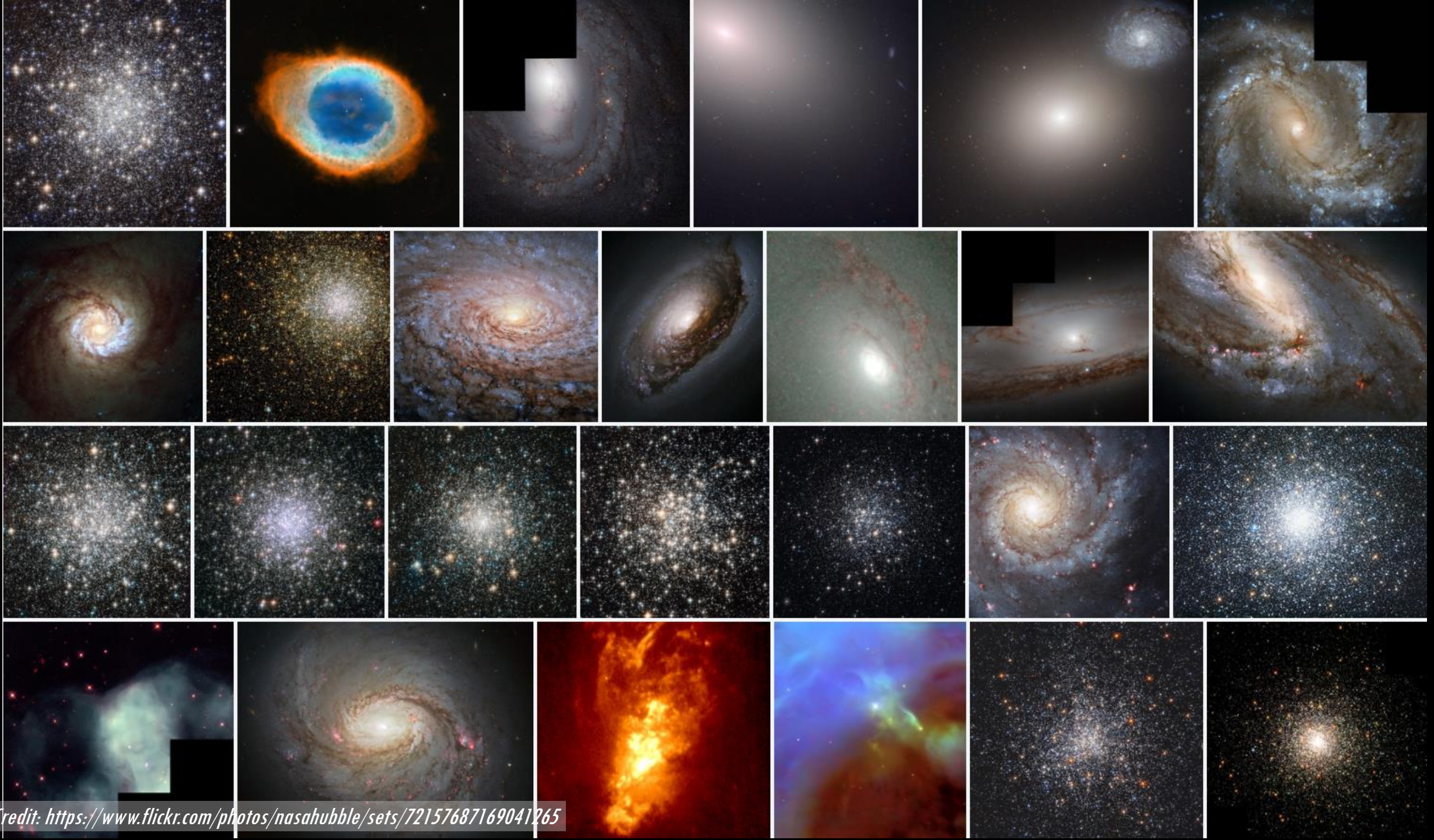
Infrared . WFC3 . 2015

NGC 6334 Nebulosa Zampa di Gatto



NGC 6543 Nebulosa Occhio di Gatto





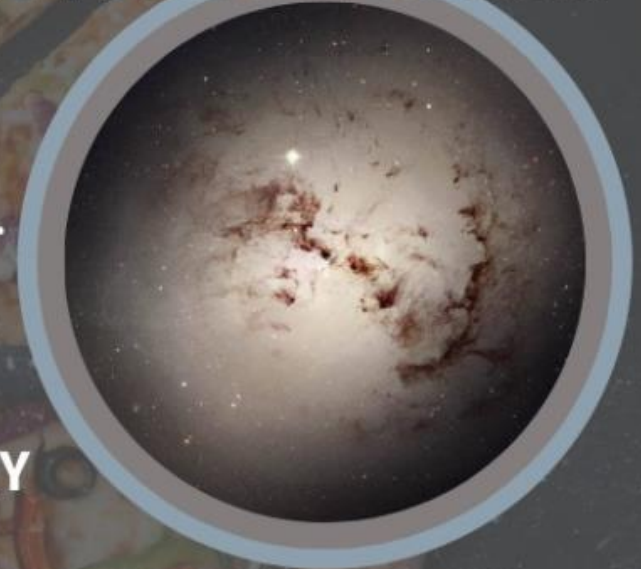
NATIONAL PIZZA DAY

Which cosmic pizza is your favorite?

A. SPIRAL GALAXY



B. ELLIPTICAL GALAXY



C. IRREGULAR GALAXY



Galassia M101 "Girandola"

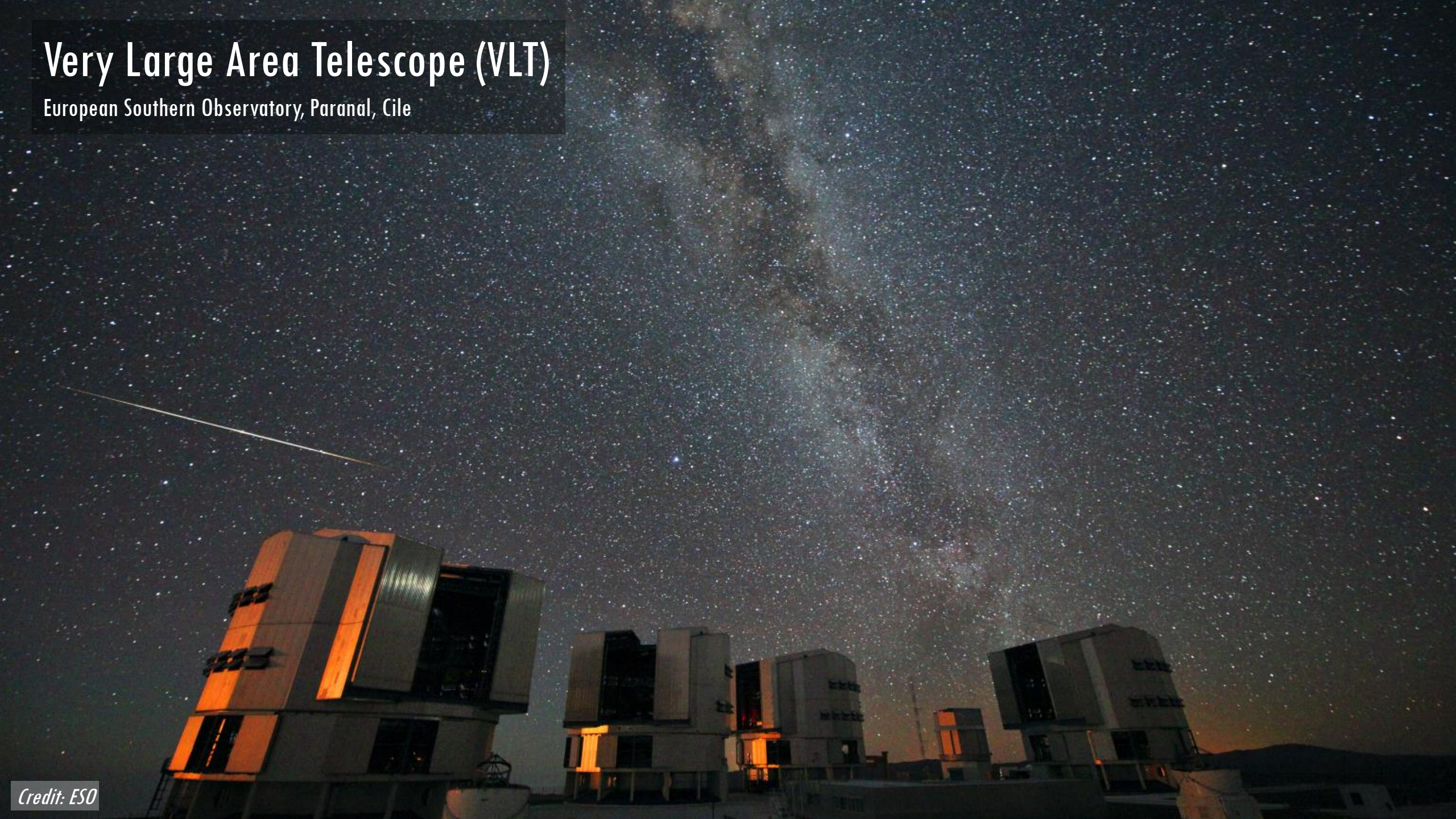
Diametro: 10^{18} metri \approx 1 trilione di chilometri \approx 100000 anni luce \approx 32 600 parsec



Noi siamo qui

Very Large Area Telescope (VLT)

European Southern Observatory, Paranal, Chile



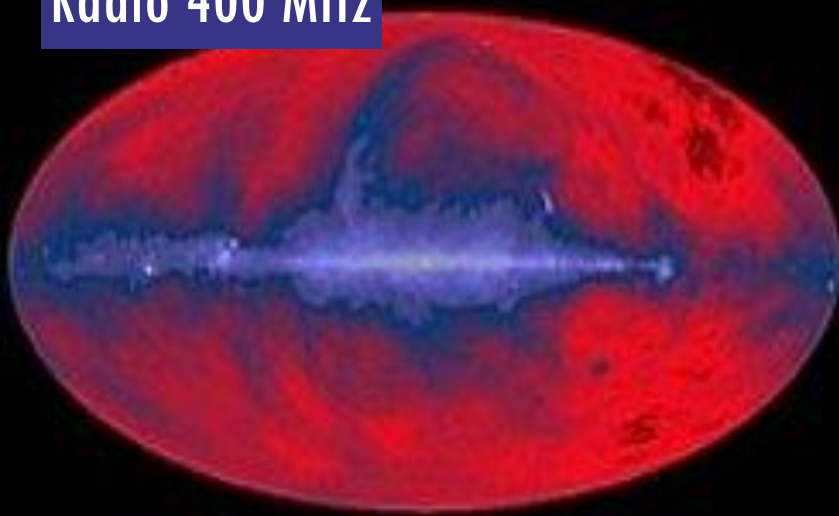
Gaia Early third Data Release (EDR3)

3 dicembre 2020

UN MILIARDO E 800 MILIONI di stelle mappate...!!!!

Il nostro Universo

Radio 400 MHz



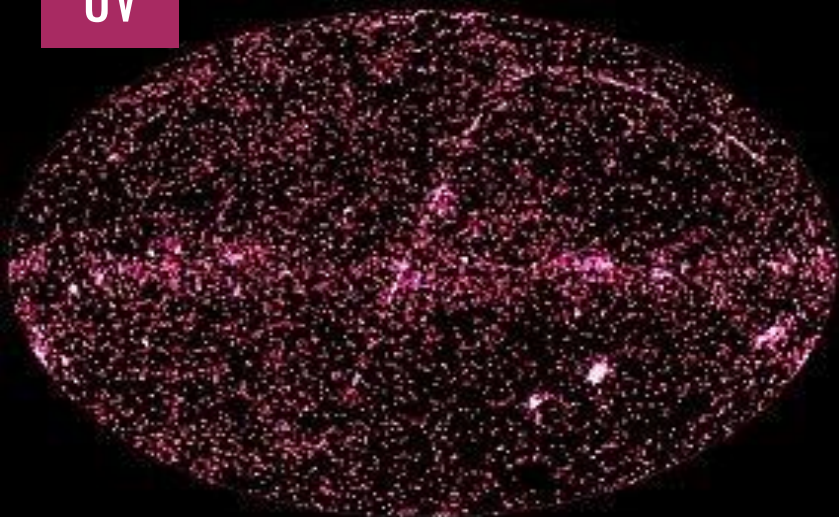
Infrarosso



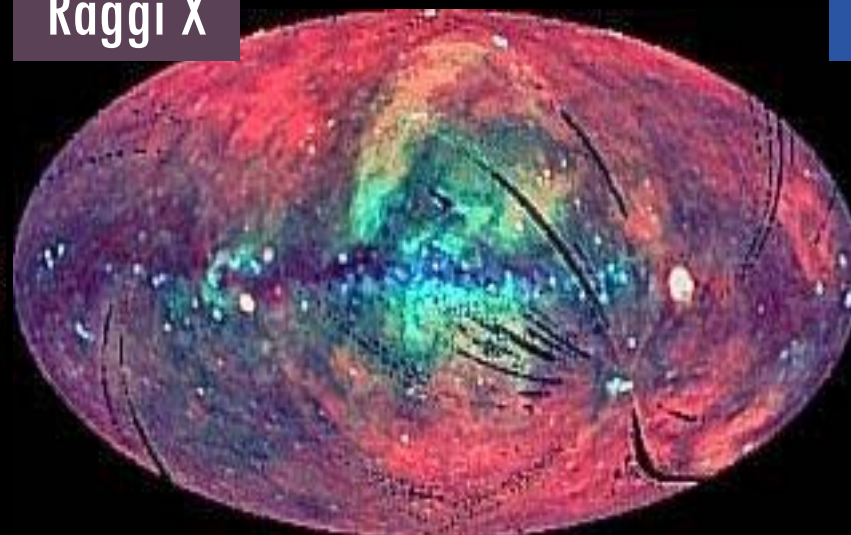
Banda ottica



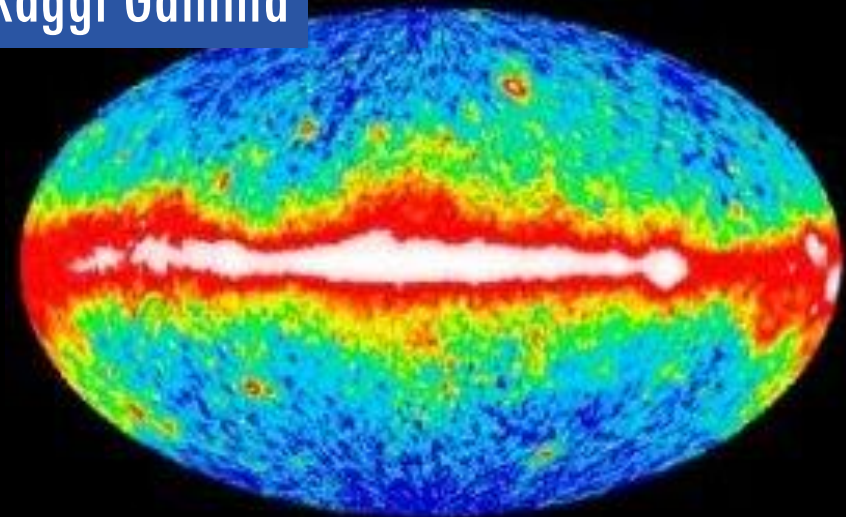
UV



Raggi X

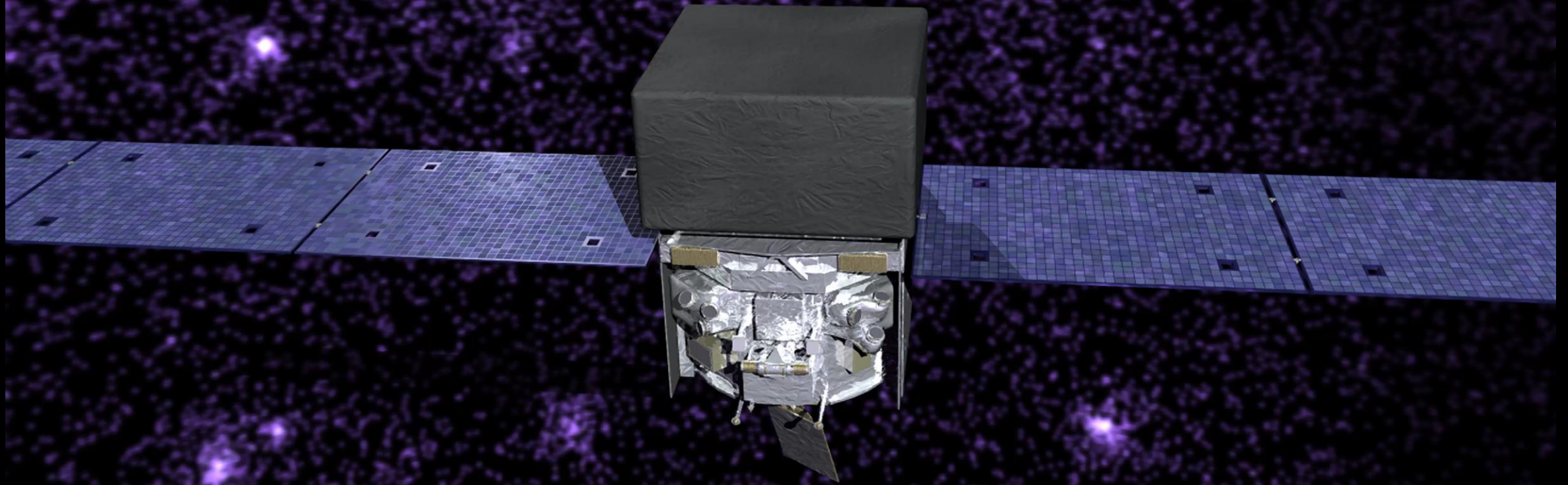


Raggi Gamma



Fermi Gamma-Ray Space Telescope

In orbita dal 2008



NASA Goddard Media Studio
<https://svs.gsfc.nasa.gov/13094>

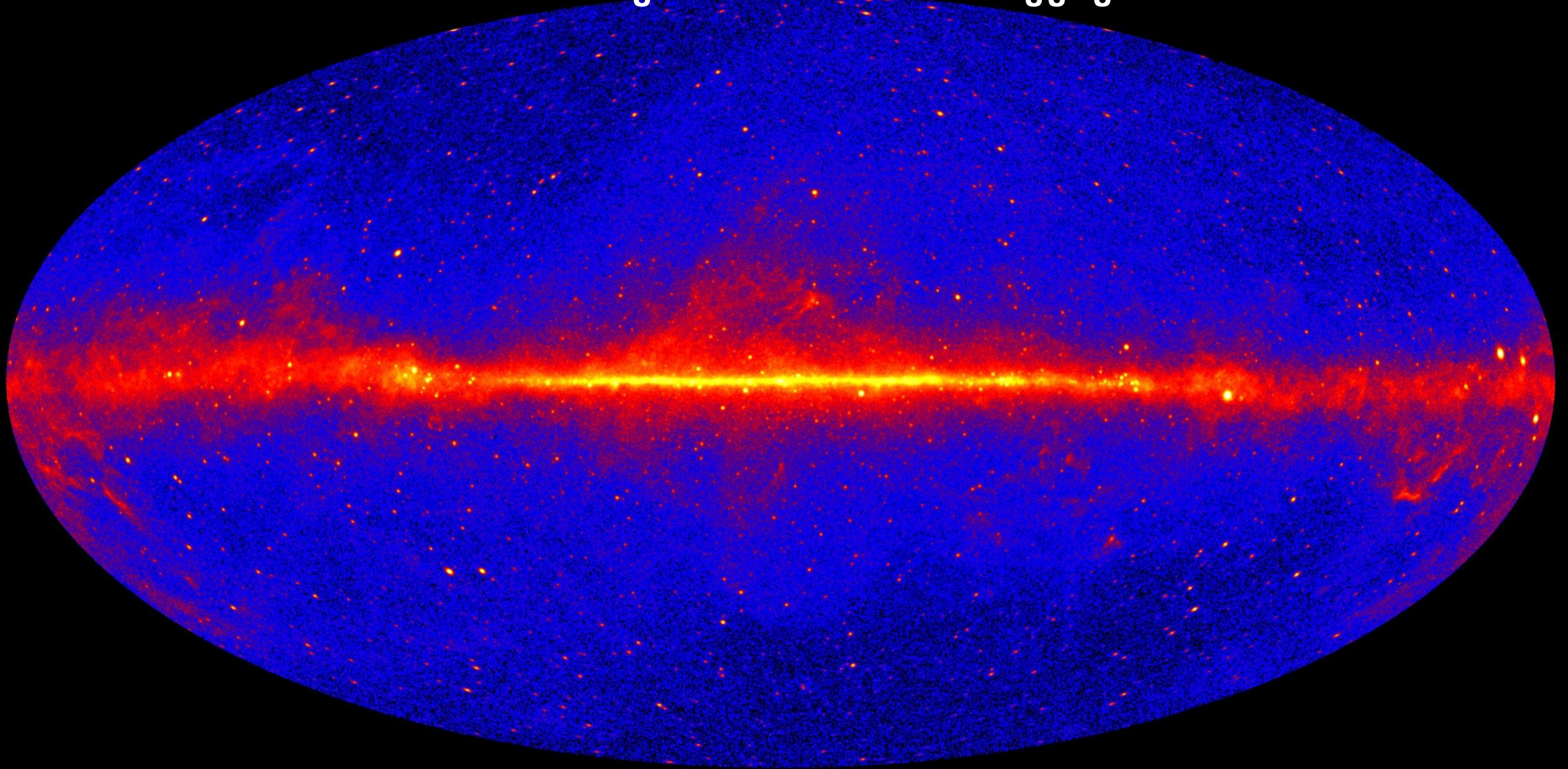
Credit: NASA's Goddard Space Flight Center/CI Lab



Credit: NASA's Goddard Space Flight Center/Gabby Garcia

NASA Goddard Media Studio
<https://svs.gsfc.nasa.gov/13272>

Quali sono le sorgenti luminose nei raggi gamma?





Credit: NASA/Goddard Space Flight Center Scientific Visualization Studio

NASA GSFC Flickr Fotostream
<https://www.flickr.com/photos/gsfcc/5162413062>

I resti di Supernova

Nebulosa del Granchio (M1)

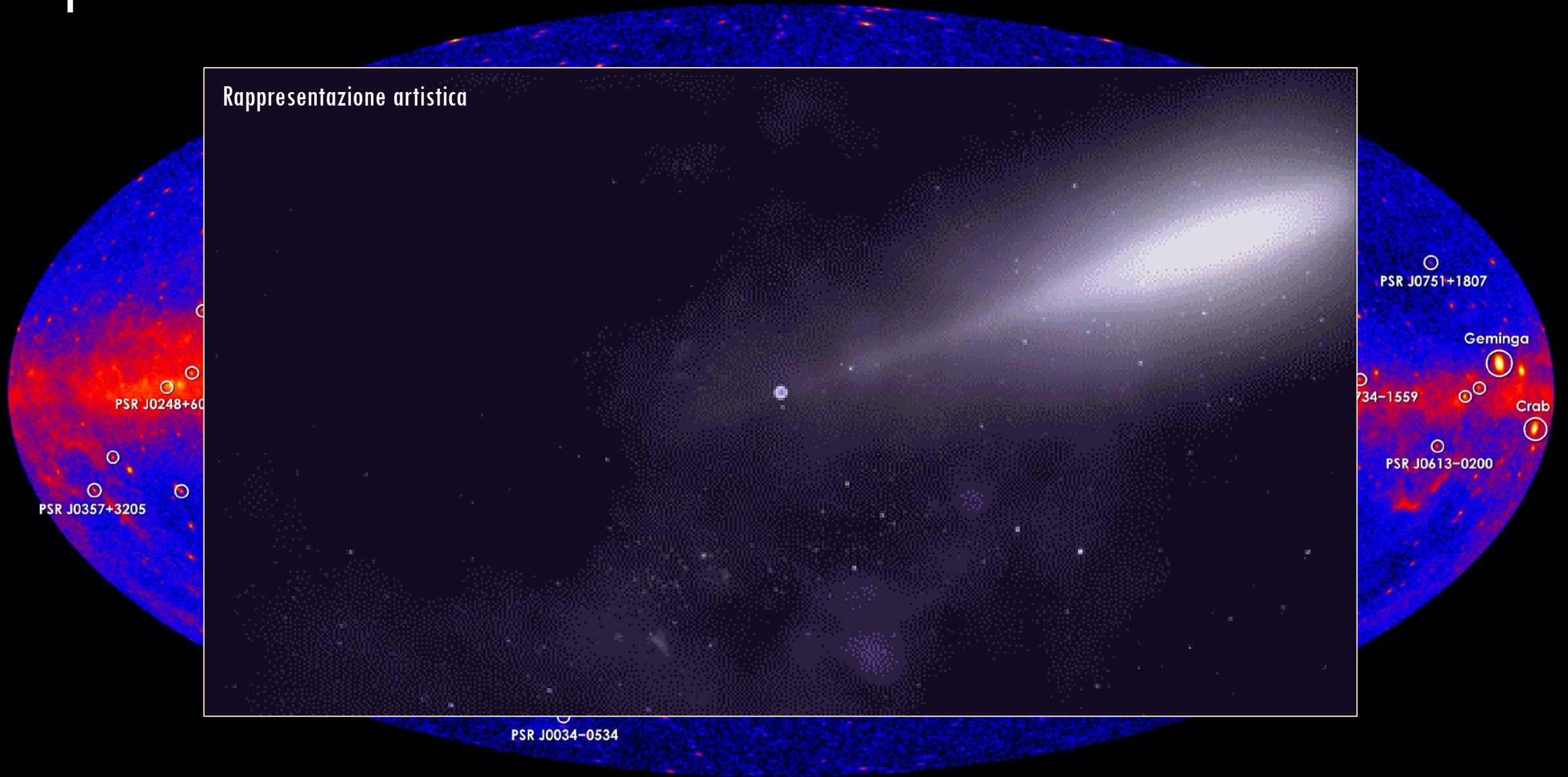
IC 443

Credit: NASA/DOE/Fermi-LAT/R.Buehler
Goddard Media Studios
<https://svs.gsfc.nasa.gov/10767>

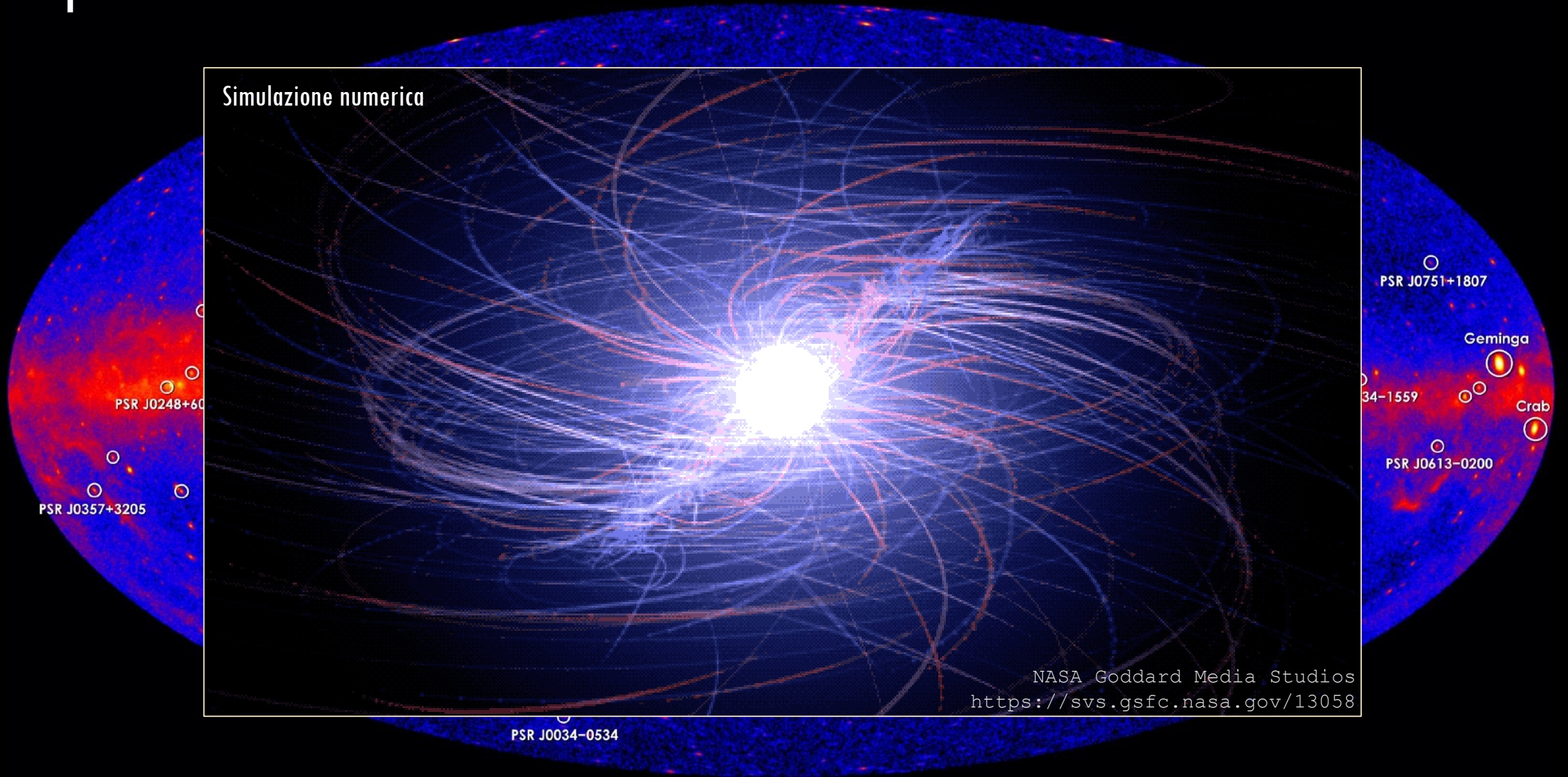


Credit: NASA, ESA, G. Dubner (IAFE, CONICET-University of Buenos Aires) et al.; A. Loll et al.; T. Temim et al.; F. Seward et al.; VLA/NRAO/AUI/NSF; Chandra/CXC; Spitzer/JPL-Caltech; XMM-Newton/ESA; and Hubble/STScI

Le pulsar



Le pulsar



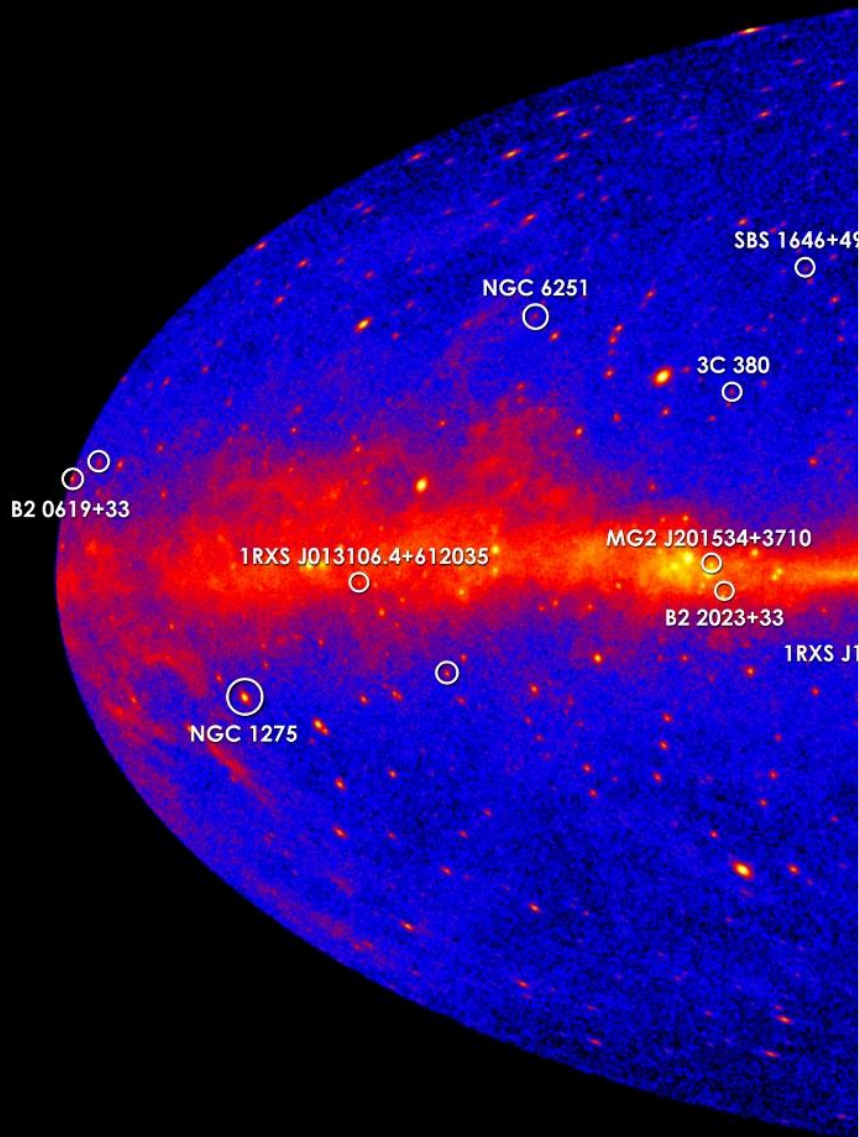
NASA Goddard Media Studios
<https://svs.gsfc.nasa.gov/13156>
NRAO Outreach
<https://vimeo.com/325195213>



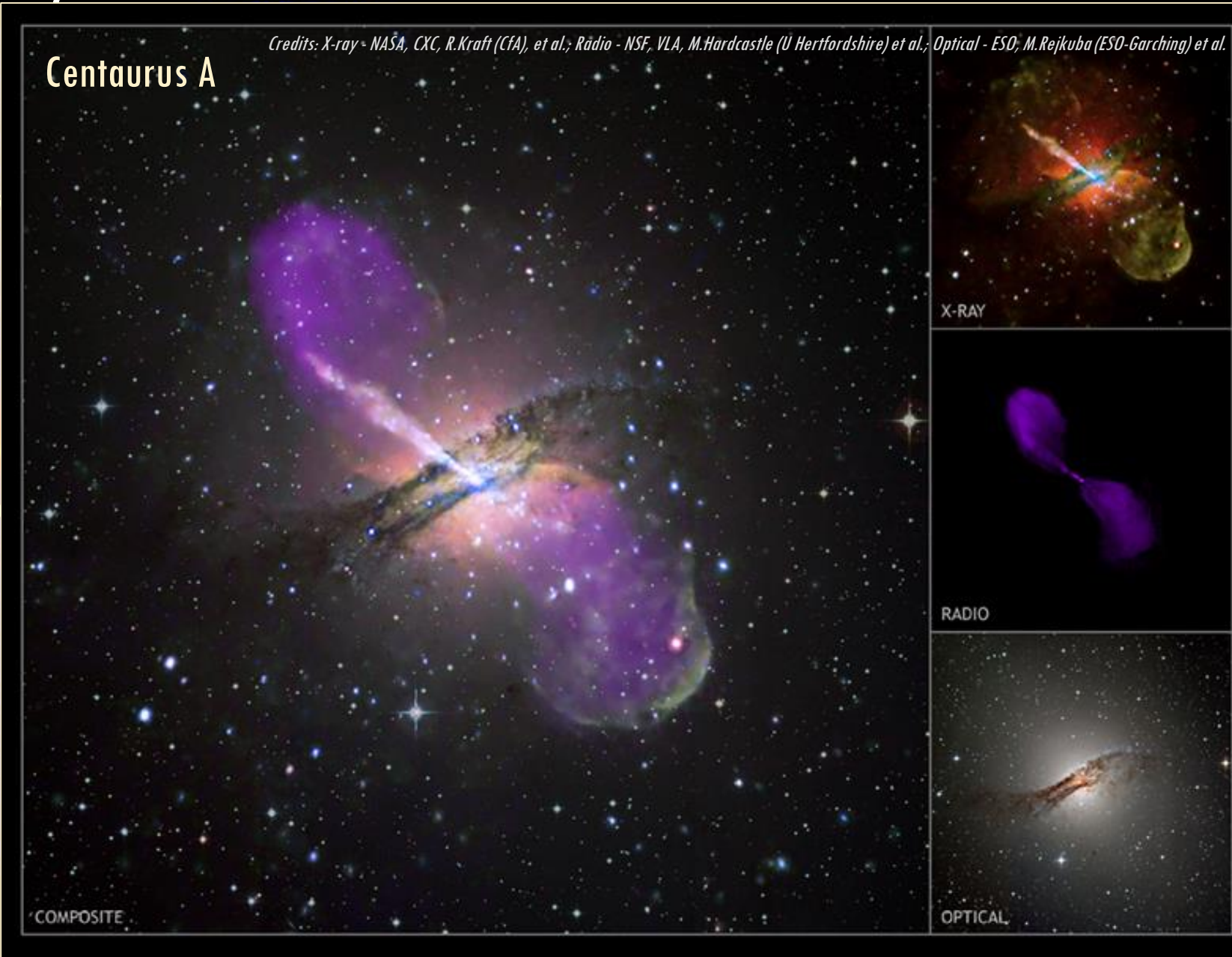
Credit Sophia Dagnello, NRAO/AUI/NSF



I Nuclei Galattici Attivi (AGN)

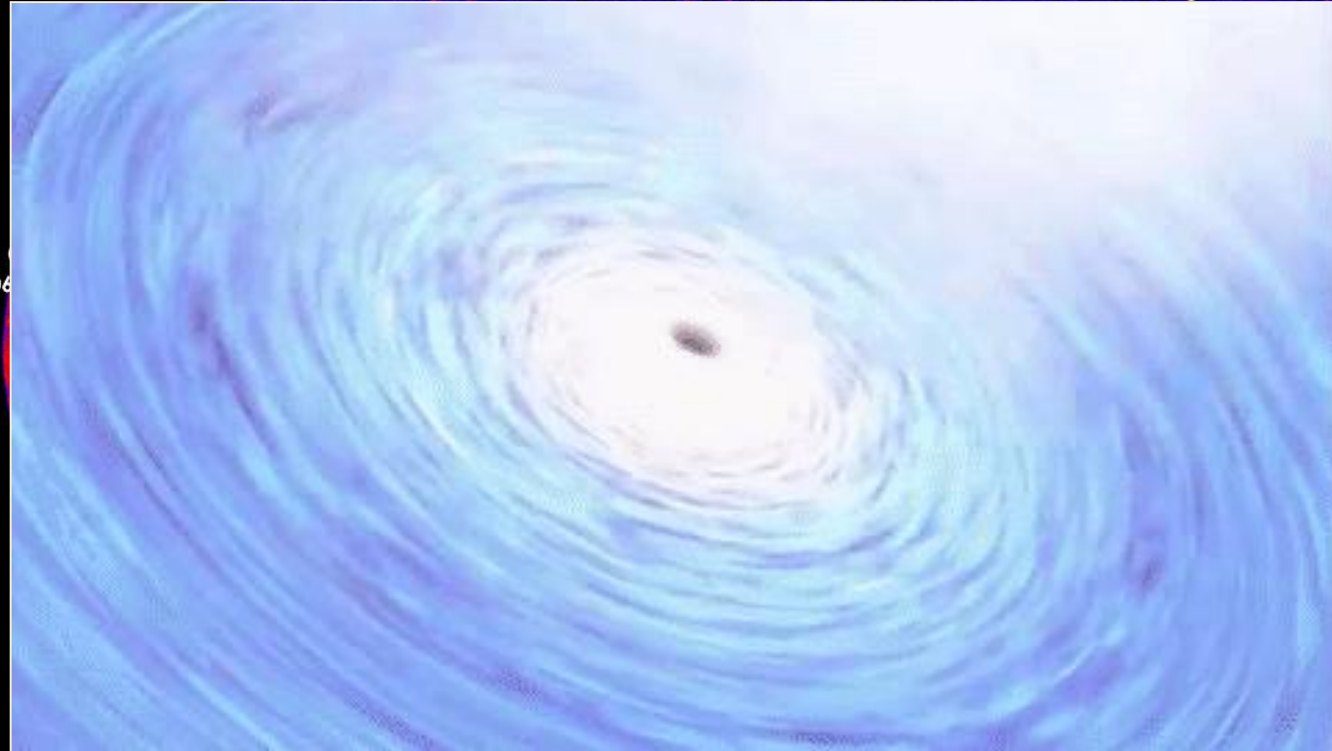


Credit: NASA/DOE/Fermi LAT Collaboration



I Nuclei Galattici Attivi (AGN)

Rappresentazioni artistiche



4C +29.48

M87

PKS 1502+036

B2 06

J1

1-5

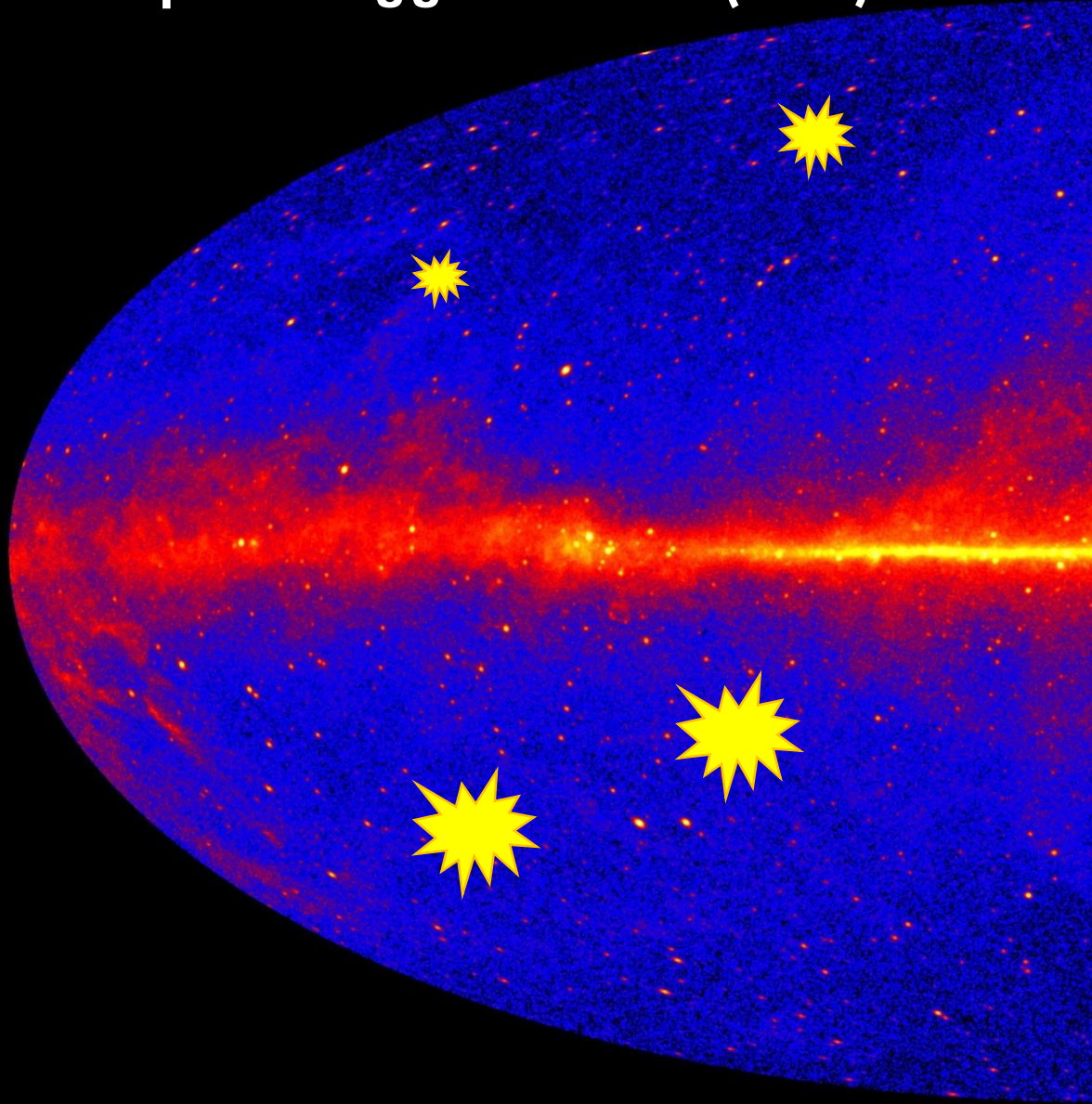
J21

PMN J2250-2806

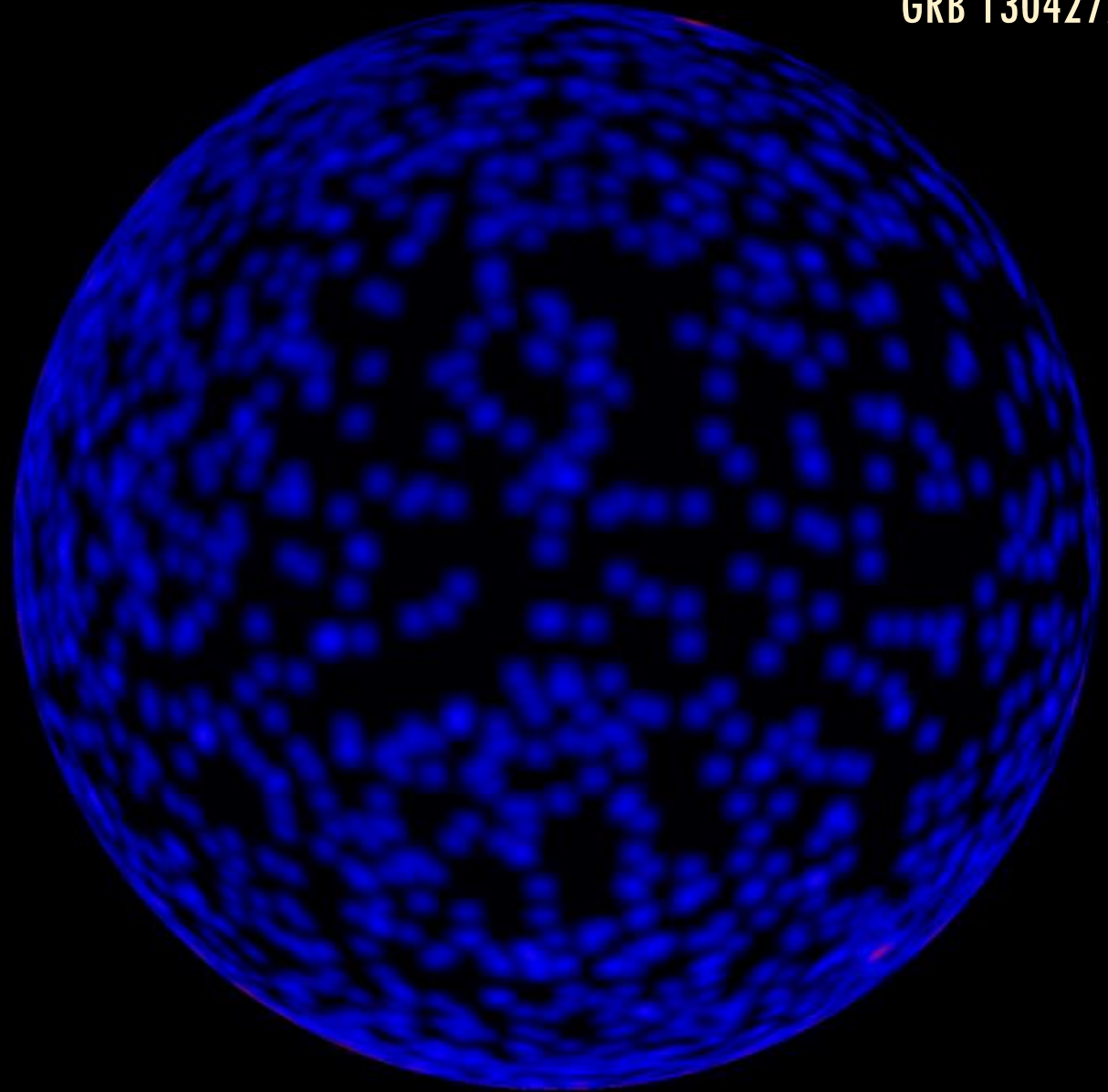
PKS 0208-512

Galassia Attiva 3C 279

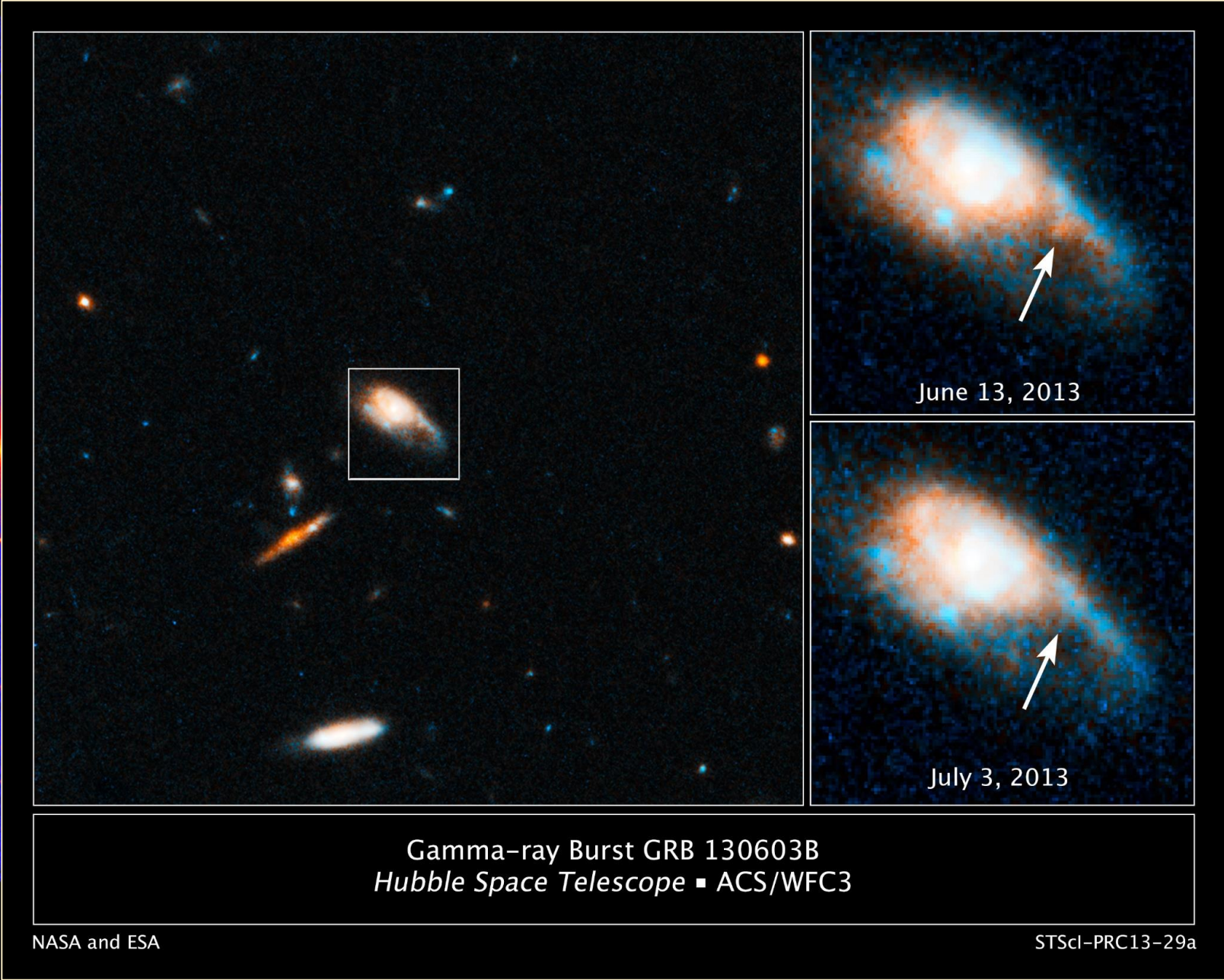
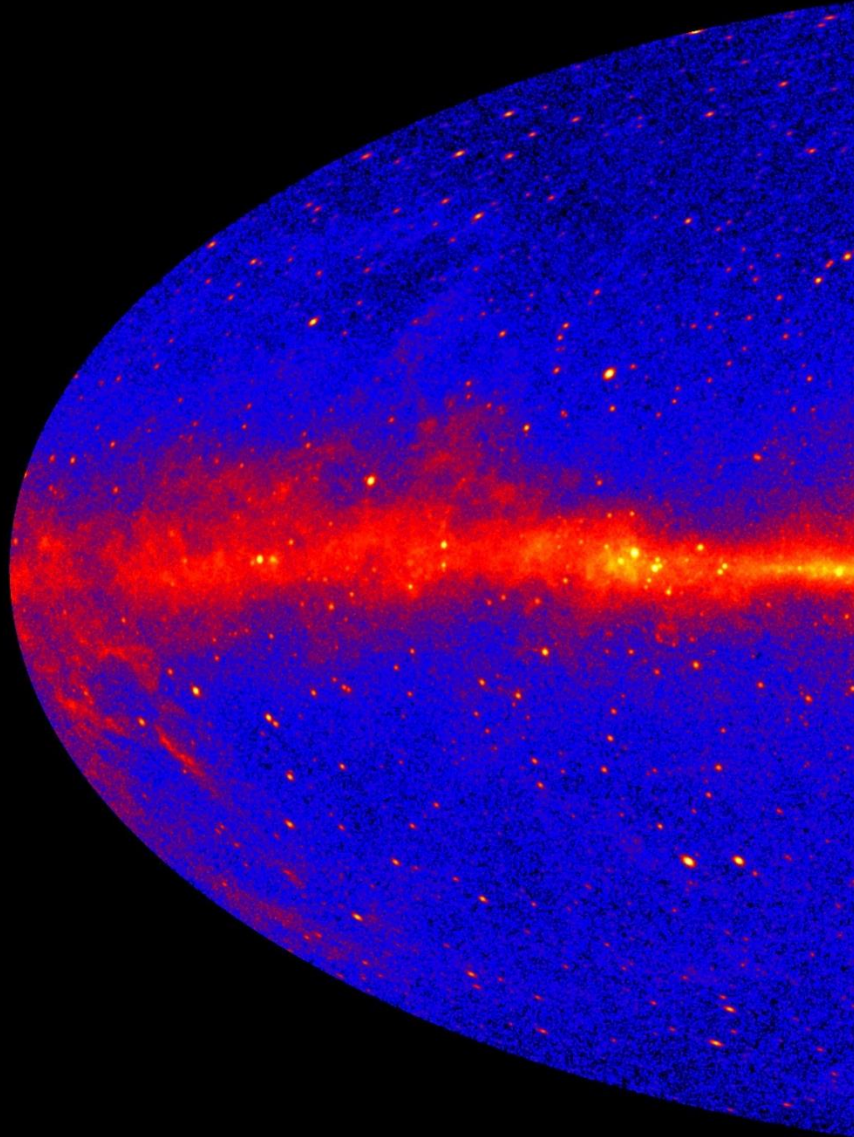
I Lampi di Raggi Gamma (GRB)



GRB 130427A



I Lampi di Raggi Gamma (GRB)



I Lampi di Raggi Gamma (GRB)

GRB di lunga durata — Stelle singole



Rappresentazioni artisticiche

GRB di breve durata — Stelle doppie



Credit: NASA/AEI/ZIB/M. Koppitz and L. Rezzolla

Music: "Approaching Eclipse" from stock music site Killer Tracks

NASA Goddard Media Studios
<https://svs.gsfc.nasa.gov/11530>

Grazie per l'attenzione!

`elisabetta.bissaldi@ba.infn.it`

