



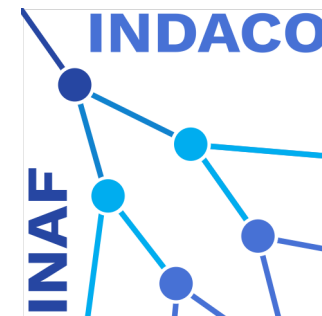
CTAO



The Color of Cherenkov Light

What can INDACO do for your TeV Universe?

Anna Wolter



*From 9 to 40: the SST telescopes &
Gamma Ray Science with ASTRI and CTAO
Haus Sexten, Jul 23rd*

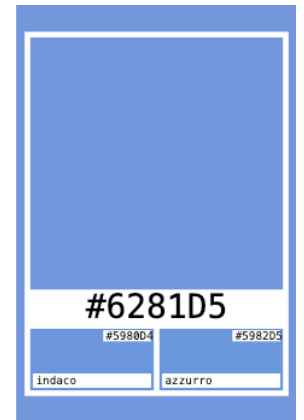
INDACO



INAF per la Divulgazione
di ASTRI e CTA Observatory

Originale

#4b0082



$\lambda = [4200-4500 \text{ AA}]$

INAF per la Divulgazione di ASTRI e CTA Observatory
INAF for the Dissemination of ASTRI and CTA Observatory

Why Outreach?

The buzz word today is “Public Engagement”
enhance value of knowledge, aware of interactions of multiple
territorial identities, to overcome challenges and innovations of
conducting and sharing research.

Open dialogue, sharing, solid working relationships, co-creation

“Bringing **young people closer to science** is essential.”

“We should educate young people to be knowledgeable of new
technologies so that they could **become good leaders of
tomorrow.**” [Nichi d’Amico]

Why Outreach?

A **duty** – e.g. Legge 7/06/2000, n.150 “*Disciplina delle attività di informazione e di comunicazione delle pubbliche amministrazioni*”. Increase **brand recognition** among key decision-makers and policy bodies; Demonstrate **transparency and accountability** to taxpayers, justifying continued state support; Meet **mandatory criteria**

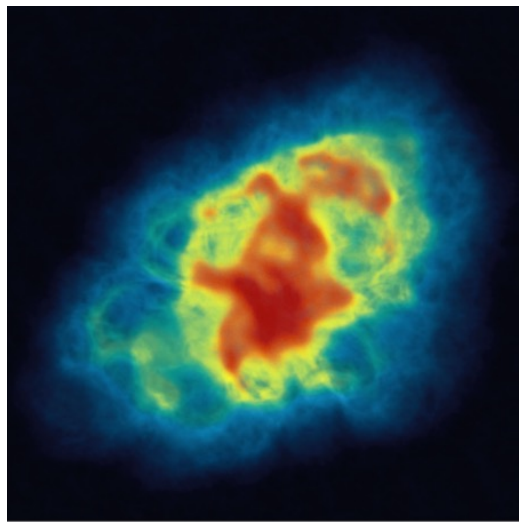
An **advantage** – improves **core communication**; builds **trust**; **inspires** the next generation of students/scientists; sparks **unexpected ideas** from cross-contamination with other disciplines.

Start with a solid foundation: become known and create trust; Select **target group(s)**: *including the public, media, educators, the collaboration, the local/national communities and key decision-makers.*

Exploit different **expertise** from within the group.

Why INDACO?

- VHE astrophysics presents a **unique communication challenge**: unlike the intuitive beauty of the optical sky, the VHE gamma-ray Universe is "invisible and blurry"



RADIO



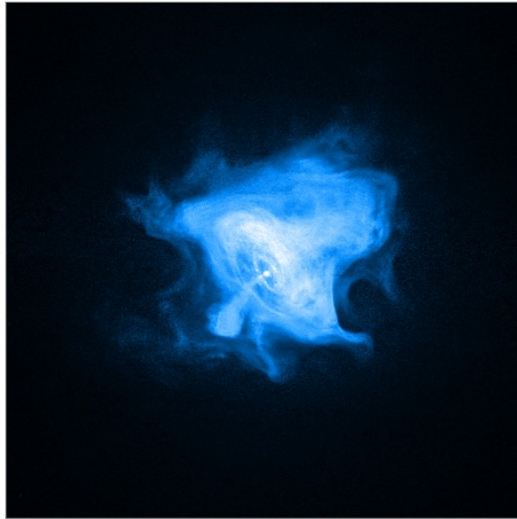
INFRARED



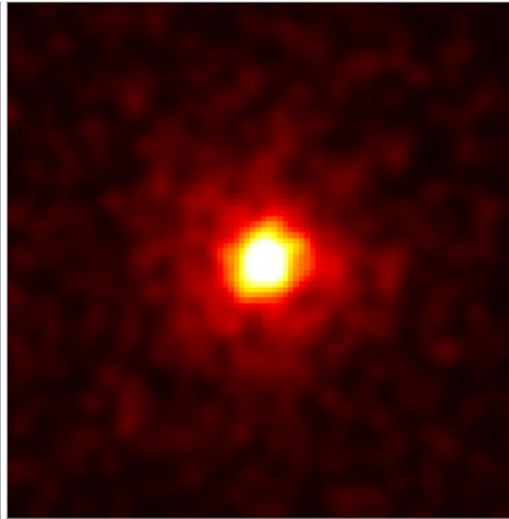
VISIBLE LIGHT



ULTRAVIOLET

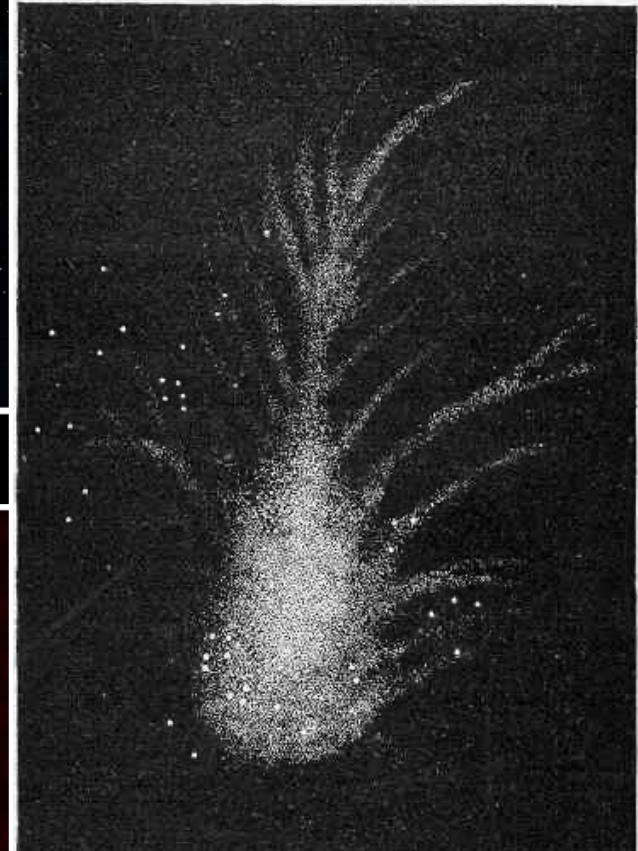


X-RAYS



GAMMA RAYS

CRAB NEBULA



see Jim Hinton

-Power-laws and blobs!

-mas (radio) vs. degree

see Marcello Giroletti

Why INDACO?

- VHE astrophysics presents a **unique communication challenge**: unlike the intuitive beauty of the optical sky, the VHE gamma-ray Universe is "invisible and blurry" and relies on indirect detection techniques via the atmosphere, using Cherenkov radiation produced by particles **faster than light!**
- How do we bridge the gap between such an abstract and difficult science and the general public?



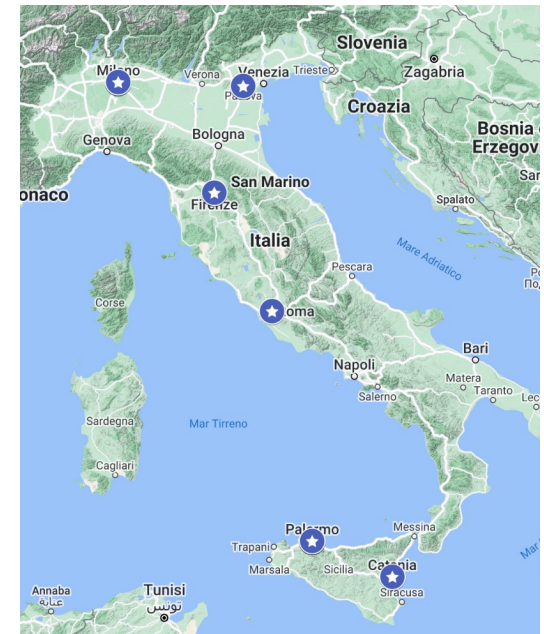
The INDACO team

Since Jul 2020 - the group includes: Theoreticians, Observers, Engineers, Science communicators, both staff and students.

- Via online meetings and working sub-groups
- A bit of re-shuffle of people in the years

About 20 people have contributed so far
–about a dozen working currently

We are always **open** to new people joining!!







Main goals

- ❑ To convey the **complexities** of TeV science and Cherenkov detection technology into accessible narratives for **diverse audiences** (kids, teenagers and adults alike).
- ❑ To highlight the technical expertise within **INAF**, positioning the Institute as **a leader in Very High Energy** (VHE) astronomy.
- ❑ By showcasing the human and technical presence behind ASTRI and the CTAO, strive to inspire and **engage students** towards STEM studies and, possibly, careers.
- ❑ To become a solid **link** between the projects & people and the **INAF communication office** to provide adequate visibility.



How: CTA+ (money money money...)



Finanziato
dall'Unione europea
NextGenerationEU



Ministero
dell'Università
e della Ricerca



Italiadomani
PIANO NAZIONALE
DI RIPRESA E RESILIENZA

PNRR Italian government funds (71.5 M€) INAF led with collaboration with INFN and italian Universities

Main aim of CTA+ is the construction of **telescopes**
(2 LSTs for the CTAO-South and a few SSTs) (\$\$\$\$)
Then science (\$\$)... then outreach (\$)



Challenge: reach a diverse audience

- develop **innovative** formats
- immersive and interactive Virtual Reality experiences
- an original theatrical play centered on Cherenkov radiation.
“Echi di Luce – e l’Universo bussò alle porte dell’aria”



Challenge: beyond pretty images

- Converting the high abstraction level of VHE astrophysics into **sensory** experiences
- How **different lights** talk a **different language**
- All together they make our knowledge wider/deeper
- Laboratory for **primary school** at Festival della Scienza (GE)



Challenge: stories about people (& project)

- Looking for personal **achievement** to tell success stories
- Narratives of **all the aspects** of constructing a project
- **News** ASTRI/**social** posts
- Interviews of ASTRI people (coming soon on a new YT ch.!)



Challenge: engaging students

- To build **scientific citizenship**
- To explore high-energy astrophysics, learning **key concepts** about cosmic sources and how Cherenkov telescopes work
- Through **collaborative teamwork** and **critical inquiry**
- Escape room: “Bang!” be a scientist and discover your source



A **scientific paper** on the analysis of the effectiveness of the escape room is underway

Challenge: promote STEM

- To **inspire** the next generation of scientists
- To **connect** high school students directly with researchers to discover how Cherenkov telescopes observe the Universe's most energetic events
- To **promote** Italy's contribution to CTAO
- A **competition** for a high school students: a hands-on look at high-energy astrophysics and Cherenkov telescopes organized in collaboration with INFN



A “Cherenkov” competition for classes

Themes:

1. Astrophysics
2. Fundamental Physics
3. Technology

Target: Classes of the last years of **high-school**

Shared to CTAO countries as a possible **FORMAT**

CONCORSO CTA+

Guardare il cielo con nuovi occhi –
I raggi gamma e i telescopi Cherenkov

<https://pnrr.inaf.it/progetto-ctaplus/cta-scuole/>



Napoli @Città della Scienza 27 Mar 2026

- Consultation material
 - Feed-back and researchers' involvement
 - Organization
- 55 classes pre-registered from all over Italy
 - 33 classes presented a project (about 500-600 students)
 - 21 classes present for a total of > 250 student and almost 50 accompanying professors



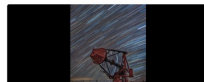


Challenge: reach out to the public

- ASTRI website
<https://www.astri.inaf.it/>
- With the contribution of Patrizia Romano & Stefano Vercellone for the **science contents**
- **News** on major events



ASTRI (ASTROFISICA CON SPECCHI A TECNOLOGIA REPLICANTE ITALIANA) –
A SMALL SIZE TELESCOPE (PROTOTYPE & ARRAY)
INAF for gamma-ray astronomy with aplanatic dual-mirror telescopes between 1 and 100
TeV



- ❖ INDACO website
<https://indaco.inaf.it/>
- ❖ **hub** for the public, students, educators, scientific community:
toolkits for schools, **multimedia** products, **articles**



Challenge: to show the 9 ASTRI telescopes



G. Lombardi/INAF



A. Wolter/INAF



D. Lopez/IAC



R. Bulgarelli



G. Leto/INAF

Challenge: to show the 9 ASTRI telescopes



Preview: visit of the illustrator **lapin** to the Teide (thanks to **Francesca Aloisio**)

Metrics

- We have reached **directly** at least **5000** people:
 - Primary/secondary school
 - General Public
 - Colleagues of VHE and other fields
- Many more via social/articles/news
- Not just numbers: we care in **quality engagement**; in building **relationships**; in catching **journalists'** attention.
- **teamwork** and combined **expertise** + dedicated **time** and **resources** ->> best outcome.

We are not alone in this!

A two-way exchange

- ❖ Engage with the ASTRI and CTAO **scientific community**: they are the holders of scientific accuracy and trust
- ❖ Provide **support** for the publication (e.g. from infographics to finding the right language)
- ❖ Prepare **press-ready** material
- ❖ Continue to present the **protagonists**
- ❖ Disseminate the “**brand**” and create trust
- ❖ Identify **together** the most **effective strategies** to ensure long-term, widespread and impactful dissemination of our collective achievements.

A large group of approximately 40 people, including men and women of various ages, are posing for a group photo on a paved area. They are arranged in several rows, with some people kneeling in the front and others standing behind. The background features a lush green valley with a small wooden building, a dense forest of evergreen trees, and majestic, rugged mountains under a clear blue sky. The overall atmosphere is bright and sunny.

Thanks for the attention!!