

MULTI-MESSENGER CHALLENGES ADDRESSED BY ASTERICS

Rob van der Meer¹, Giuseppe Cimò^{1,2}, for the ASTERICS Consortium

¹ *ASTRON, Netherlands Institute for Radio Astronomy, Dwingeloo, The Netherlands;*

² *JIVE, Joint Institute for VLBI ERIC, Dwingeloo, The Netherlands;*



ASTERICS in general

The ASTERICS project (Astronomy ESFRI and Research Infrastructure Cluster) aims to establish a single collaborative cluster of next generation ESFRI telescope facilities and other relevant research infrastructure initiatives in the area of astronomy, astrophysics and astroparticle physics. ASTERICS facilitates researchers in astronomy, astrophysics and astroparticle physics to work together on a large scale on mutual challenges.

ASTERICS support for origin of GRB research

Why	Bringing together scientists from different messenger groups	Bringing together the data from the different messenger facilities	Doing the timing right in recording highly variable celestial events
How	DADI work package (WP) <ul style="list-style-type: none"> Developing (VO) tools together Schools, Trainings 	WPs DADI, OBELICS, DECS <ul style="list-style-type: none"> VO standards, IVOA, RDA Data handling, benchmarking Citizen Science Experiments, engaging with society at large 	WP CLEOPATRA <ul style="list-style-type: none"> Timing with White Rabbit protocol Alert protocols and mechanisms
Dates	<ul style="list-style-type: none"> 3rd ASTERICS DADI School, 21-23 Nov 2017, Madrid ESFRI Forum and training, Dec 2017, Trieste Technology Forum (VO development), Spring 2018 	<ul style="list-style-type: none"> OBELICS Workshop & training, 16-19 Oct 2017, Barcelona Citizen Science Workshop, Spring 2018, Trieste (TBC) 	<ul style="list-style-type: none"> workshop on Radio - γ : Transient Alert Mechanisms, 26-28 Sept 2017, Amsterdam www.asterics2020.eu/radio-gamma-workshop
		<p>← ASTERICS has 26 partner institutes in six European countries . →</p> <p>They support the four ESFRIs in astroparticle physics ↓</p>	

www.asterics2020.eu

Within ASTERICS the **emphasis is on dialogue and mutual understanding**. After that is established, there is room for exchange of information and collaboration. Participants in the project are now, in parallel to the developments for their own facility, more and more thinking about the possible implementation of their work in other facilities. This is something one cannot easily enforce and is a big achievement so early into the project.

E-ELT ♦ optical CTA ♦ γ -ray

As these new facilities will generate vast amounts of data, the areas that will receive **most attention** in the ASTERICS project are related to the many aspects of **data handling** (generation, transport, preservation, retrieval and analysis), as well as the **interoperability** between facilities, which is important for linked analysis, scheduling for simultaneous observations, and fast response.

SKA ♦ radio KM3NeT ♦ ν

Timing accuracy for simultaneous observations and alerts has been improved. The development of the technology for enabling long-haul and many-element time and frequency distribution over fibre connections, for relaying alerts, and for streaming data goes far beyond the recent state of the art. ASTERICS has demonstrated a new and very precise dispersion delay measurement method. A working e-transfer prototype was delivered.

