

Source → Propagation → Detection

Unknown

High-energy
astrophysical
phenomenon
???

Numerical code
CRPropa3
SimProp

Pierre Auger Observatory
Telescope Array

Fermi
HESS
CTA
LHAASO

IceCube
ARA
ARIANNA
GRAND

Welcome to
multi-messenger astronomy !!!

UHECRs

CMB photons

Gamma-rays

Neutrinos

IRB photons

