

## **ASTERICS and the challenges of Multi-Messenger Astrophysics**

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Multi-messenger astrophysics is a field rich in opportunities but also challenges. It requires collaboration and coordination within a global network of facilities. The scientific drive towards combining and aligning data from different facilities in order to comprehensively study multi-messenger and transient events requires interoperability between hybrid data streams with unprecedented time synchronization across locations distributed across the Earth. The current observational strategies need to be adapted to take into account commensal operations. Practically, new approaches to computing and data analysis by means of machine learning have to be implemented because of the data volume and the issues of complex scheduling of hundreds of antennas operating at different regimes. Aligned with this vision, the European Commission approved (in the framework Horizon 2020) the ASTERICS initiative -ASTronomy ESFRI and Research Infrastructure CluSter- to collect knowledge and experiences from astronomy, astrophysics and particle physics and foster synergies among existing research infrastructures and scientific communities, with the ambition of seeing them interoperate as an integrated, multi-wavelength and multi-messenger facility. In my contribution, I will present the efforts of the ASTERICS cluster towards the interoperability of the next generation of astronomical and (astro)particle physics facilities.