

Astrophysics and Cosmos Observation. The Italian National Centre on HPC, Big Data and Quantum Computing

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High Performance Computing (HPC) and Big Data technologies are powerful tools to model the complex dynamic systems studied in Astrophysics and Cosmology today. They are essential for the majority of activities in modern astrophysics. These activities range from processing and analysing astronomical data to interpreting and comparing them to theoretical predictions, as well as running simulations and artificial intelligence applications. INAF is a key player in the Italian National Centre on HPC, Big Data, and Quantum Computing. The Centre is managed by the ICSC foundation and it is funded by the EU PNRR plan. INAF has the leadership in one of the ten founding Spokes, namely “Astrophysics and Cosmos Observations”. The Spoke is conducted adopting a collaborative approach that involves the active participation of the community. By utilising a code-sign methodology, the aim is to develop applications supporting large-scale experiments such as SKA, CTA, EUCLID, GAIA, LOFAR. This approach combines the expertise of scientists and community code developers to create innovative software and hardware solutions fostering the coordinated development of applications and technology. In addition the challenges of Big Data processing and analysis using cutting-edge techniques like Artificial Intelligence and Bayesian statistics are tackled. Finally, advanced scientific visualisation methods for an intuitive insight to complex multidimensional data are investigated. The Spoke promotes also a close collaboration with industrial partners and private subjects by means of the dedicated “Innovation Grants” and “Cascade Fundings” programmes, promoting an effective knowledge and technology transfer from research to industry at the national scale.

sessioni congresso

Tecnologie avanzate e strumentazione

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