

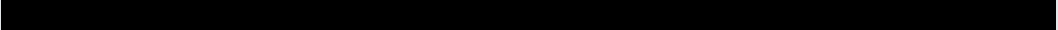


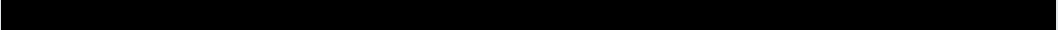
WP3: Recap, piani e stato

Conveners:

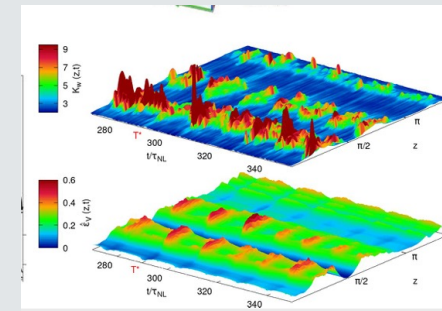
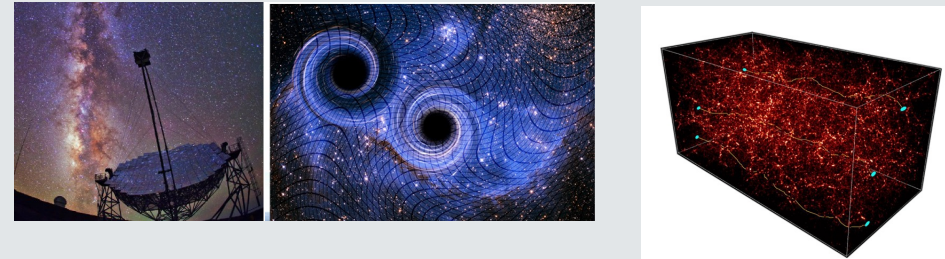
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- The use cases for WP3 are not consolidated yet
 - Obvious redundancies exist in what is presented. Significant "pooling" is required.
 - One immediate goal of the session is to make these redundancies emerge, to ease the process of trimming down the number of use cases, with full involvement of the participants.
 - At the same time, some key inputs are surely missing. We encourage interested groups to provide feedback and ideas
 - Little time for discussion ~~today~~ *yesterday* => The conveners ~~will try to~~ *actually did* take minutes on a [google doc](#)
 - You are welcome to contribute: editing rights are open
 - A longer term goal of this session is to pave the roads for future activities
 - We need to organize telecons (yes, we know we all have too many)
 - We need to establish links with other WPs

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- For WP3, this was the first occasion to meet (no previous informal contact)
 - No previous organization of the use cases: we had to proceed on the basis of “local” contribution
 - We had 11 contributions from:
 - INAF (for several institutes/activities), UniFe, UniCal, PoliBa+UniBa, UniMiB, Sapienza, UniTs, UniFi, UniSalento (+INAF), UniPd, INFN-LNF
 - All groups generally connected with local INFN sections (INAF of course a case of its own)
 - Statement of interest from UniNa and UniBo
 - Other groups are listening and may join in

- A loose classifications of the topics covered sees:
 - IACT/CTA (Cherenkov) + astroparticle detection (e.g. CALET, JEM-EUSO, HERD, ...)
 - Geodetic satellites (LAGEOS/LARES)
 - Pipeline for satellite data analysis (atroparticle/X/Gamma) in “heterogenous” synergy (e.g GW)
 - Cosmology/CMB/early Universe (LiteBIRD, CMB-S4, Euclid, SKA, ...)
 - Turbolence with application on atmo- and helio-spheres + Compact oboject simulation and merging
 - GW:
 - Lisa/Virgo/Kagra
 - LISA
 - ET
 - Multimessenger astrophysics
 - Some interest in “near astrophysics”, e.g. solar sytem
 - Dark Matter + neutrino (CYGNO, DAMPE, Hyper Kamiokande)



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- Very preliminary assessment of use cases involved:
 - Event search and/or classification (Cherenkov, GW, DM, ...)
 - Largely GPU based
 - A few requests for FPGA
 - ML techniques often proposed
 - Simulation/reduction pipelines for cosmological surveys
 - Strongly CPU/HPC based
 - Some I/O + bandwidth requests
 - Request for CPU/GPU flops for existing codes (not necessarily connected to algorithm development)
 - Code development:
 - Cross-analysis of datasets, joint analysis of heterogeneous data
 - Machine learning development appears “almost everywhere”
 - Porting existing codes on GPU: wide spectrum of readiness
 - Request for improving data accessibility



- Remarks:

- Some theory-related interest is evident: synergies (or redundancies with WP1)
- Few communities have clear and already exploited synergies (GW is a clear case)
- Several synergies with WP4/WP5 mentioned upfront:
 - Data accessibility
 - Smart interfaces
 - Performance boosting/optimization of existing codes
- Obvious overlap from WP3 with Spoke 3 activities: still to be understood/handled
- What is missing?
 - Little explicit mention of cosmological simulations
 - Little activity on redshift surveys / 21 cm
 - Could expect more feedback from laboratory experiments (neutrino, DM)