Need for coordinated R&D: the ET perspective

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ET approach

• ET is a “Research Infrastructure”:
  • The focus is on the facility that needs to be studied in order to host almost every type of detector:
    • “limit the limitations” to geometry, topology, technology
  • This approach reduces the conflicts with the commissioning, data taking and upgrade of the advanced detectors:
    • All the developments implemented in aLigo+/++ or AdV+/++ are in principle eligible in ET
  • (almost) No subtraction of human and financial resources to advanced detectors
• Need of new competences in:
  • Civil engineering for the infrastructures
  • Legal issues
  • Organization
  • Safety
• This reflects on the Roadmap we presented to the institutions
ET R&D

• Nevertheless “specific” R&D is needed for ET:
  • Cryo-related:
    • Materials for mirrors & suspensions
      • Silicon
        • Synergies with LIGO Voyager
      • Sapphire
        • Synergies with KAGRA
    • Cryo-coatings:
      • Common problem
    • Laser $\lambda \geq 1550$nm
      • Synergies with LIGO Voyager
  • Underground related
    • NN subtraction in underground sites (sensors and methodologies)
Most urgent issues

• These are more related to 3G rather than only ET
  • Science targets:
    • ET conceptual design study contains already a first science case
    • But the ET study opened a new sector in our field and many scientific paper have been stimulated with new achievements
    • Is GW150914 affecting the 3G Science perspectives?
      • The presence of stellar mass/intermediate mass BHBH is pushing for a better sensitivity at low frequency?
  • Network:
    • ET has been forced to born as EU initiative, now it is time to think in a global way
    • How many sites? Where? 2G+/3G hybrid network
  • Site(s)+Funding
    • Localization of the sites is a mixed scientific-financial-political issue
    • It is time to work in a coordinated way on these aspects
Proposal ... Ideas

3G coordination committee

- Science case
- Network and sites
- Funding
- Technologies harmonization (R&D)

aLIGO+/++ R&D

AdV+/++ R&D

KAGRA