



Narrowing the Field: Possible Goals for this Meeting

GWADW
Lago Mar, Florida
May 11, 2009



A Bit of History

- 1995: First Aspen meeting on Gravitational Waves
 - Initially sponsored by LIGO, leading to:
 - “LIGO Research Community”
 - Unsuccessful first attempt to grow the GW community
 - LIGO Scientific Collaboration
 - White paper on Advanced Detector Concepts
 - First meetings were small (<70), attracted mainly “experts”
- Moriond winter meetings began including gravitational waves about the same time
 - Typically larger meeting and more diverse, but smaller attendance by GW community
- Competition viewed as a negative for the field



Birth of GWADW

- 1999: Aspen and Moriond organizers agreed to merge GW portion into a single sequence
 - GWIC replaced LIGO as the “sponsoring” organization
 - Adopted the theme of Advanced Detector Workshop, the primary “nuts and bolts” workshop for experimenters
 - Complementary to the successful GW Data Analysis Workshop Series
 - First meeting held in Moriond 1999, but later alternated between Aspen and Elba,
- 2001-2003: Second generation detectors (Advanced LIGO, Advanced Virgo, LCGT) dominated the program
 - Appropriate focus for the time, important for moving these projects forward



More Recent GWADW Meetings

- 2004-2006: Focus somewhat disjoint
 - Declining attendance
 - Second generation developers were fully consumed by their project responsibilities
 - Third generation detectors seemed too distant
- 2008: Another turning point
 - Second generation detectors became more “secure”
 - Possibility of third generation detectors began to open up
 - Particularly driven by Einstein Telescope (ET) study funding
 - 2008 program saw a resurgence of new ideas (the “let a thousand flowers bloom” phase)
- Sets the stage for this meeting



2009: Rationale for this Program

- Second generation detectors (Advanced LIGO, Advanced Virgo, LCGT) use well-established technologies that are in the D-phase of R&D
 - Development is still needed, but will be better done in the directed environment of the projects
- Third generation detectors are still in that “anything is possible” phase, but the time is coming to move into the definition phase
 - Advanced LIGO proposal 2003, White paper 1999!
 - Timescale for funding large scale science is still growing



What Does “Narrowing the Field” Mean?

- One goal of this meeting is to ***begin*** to develop a community consensus on the most promising research directions for third generation detectors
- Also ***begin*** to evaluate combinations of research directions that make sensible integrated detectors
 - Good example: cryogenics and very large silicon test masses
 - Bad example: cryogenics and high power lasers
- ***Begin*** to match particular detector ideas with the astrophysical motivations that help justify them



Does That Mean We Can Only Be Interested in Near-term Research?

- NO!
- The experimental community needs a place to expose and explore new and speculative ideas, and GWADW should be that place
- But...
- We also need to critically evaluate the potential, the feasibility, and the scientific pay-off for different developments
- We need to see that those projects with the “best” pay-off are the ones that get the bulk of the attention



Why do we need to do anything different from the past?

Third generations detectors will be different:

- Expensive
 - Will be in competition with other large science projects
 - E.g., “US ET” vs. Thirty Meter Telescope?
- Justified by astronomy more than physics
 - E.g., will be evaluated by the US Astronomy Decadal survey
 - If you haven’t read the material prepared by LISA for the BEPAC panel, you should
- Will be built in an international (not national) context
 - Need to adopt mechanisms to coordinate decisions across the boundaries of projects and funding agencies



Who Decides What Gets Done and What Doesn't?

- You (community of GW experimenters) get the first say
 - Your research over the next years will determine what matures to the point where it can be proposed for real detectors
- The broader scientific community will decide whether the scientific case (motivation and capability) is strong enough to compete against other possibilities
 - Will be in competition with wider range of projects than in the past
- Funding agencies will make the final decision



Summary

- GWADW has a history of adapting to the changing needs of the GW community
- We need to critically and frankly evaluate the ideas for the future, and begin to give priority to the most promising ones
- The best science should win out!