



Advanced LIGO MREFC (Construction) Proposal Submission

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“MREFC”

- FY 2002 Appropriations bill changed Major Research Equipment (MRE) account name to Major Research Equipment and Facilities Construction (MREFC) to reflect Congressional priority that the account’s funds be used rigorously for the designated purposes.
- MREFC to be used for “acquisition, construction and commissioning.”
- Research & Related Activities (R&RA) funds to be used for “planning, design, operations, maintenance” of new projects.

Conceptual Proposal - 1999

- Lab & LSC submitted White Paper and Conceptual Project Book in late 1999
- Requested MRE funding in FY2002 to commence support of increased and vigorous R&D
- Planned to install in the vacuum system in 2005
- Cost about \$114 million (FY2000) without accounting for contributions from operations budget and international partnerships
- Peoples panel gave favorable review
- NSF decision to support R&D through design from operating funds (R&RA) in renewal proposal

Renewal Proposal Scenario

- Vigorous LSC and Lab R&D in motion
 - » Large equipment expenses to come through Lab
- R&D including most design through final design included in proposed work
 - » Consistent with new rules
- Some long lead acquisitions included
 - » Not consistent with new rules
- MRE funds required to start in FY2004
 - » MRE proposal submission at beginning of 2002 (~now)
- Installation in vacuum system delayed until 2006

Overall Strategy

- How to optimize chance to observe gravitational waves?
- Initial LIGO – “plausible” observation, maybe unlikely ?
- Advanced LIGO – “likely” detection ?
- Minimize gap between mature exploitation of initial LIGO and commissioning advanced LIGO argues for rapid transition to upgrade
- On to the LIGO facility limit...
- Field may be healthier with vigorous progression
- Field may be under pressure if long period of searching takes place without detection
- These issues are still valid

NSF Funding/MRE Situation A Year Ago

- NSF enjoyed bipartisan support for budget doubling in 5 years with two years of the trend in place
 - » FY2001 funding increased >13%
- MRE account was transitioning to a versatile but undefined capability for NSF
 - » Proposals were invited and encouraged
 - » In the absence of a defined process, OMB and Congress were critical of NSF management process on projects
- LIGO construction success viewed as sufficient to propel MRE upgrade proposal (?)

Evolution at NSF During 2001

- MRE proposal logjam
 - » ALMA, HIAPER, NEON, Terascale, NEES, RSVP, Ice Cube,...
- Internal NSF MRE process criticized by Congress and OMB
 - » New projects jump the queue, and others stalled
 - » Some move forward before they are ready
- Advanced LIGO seen as dependent upon initial LIGO success
- Bush administration threatens NSF budget growth
- NSF drafts MRE/large facility process under OMB/Congressional pressure

Developments During 2001

- LIGO presence increased at NSF
 - » NSB presentation in August
 - » NAS presentation on management
 - » NSF “Best Practices” presentation in September
 - » ...more visits to NSF
- Renewal proposal funding approved by NSB
 - » R&D supported at pretty high level
 - » Long lead items for advanced LIGO unlikely to fit in this budget

NSF Situation Now

- Vic Cook retires
 - » Replacement not yet hired and not likely to be familiar with LIGO
- Rich Isaacson has one foot out the door
 - » Corporate memory departing
- Director/Deputy Director of NSF now more aware of LIGO but they may be replaced in the political process
- Congress approves 8.4% NSF increase for FY2002 compared to Bush request of ~1% and >13% in 2001
- Congress partly relieves MRE logjam by approving ALMA, NEES, HIAPER, Terascale, Ice Cube
 - » NEON and RSVP still waiting
 - » Homestake NUSL in preparation with non-NSF funds

Some Reasons to Submit Now

- Detecting gravitational waves is compelling and advanced LIGO “appears” crucial to detection
- Our developmental program is in concerted motion
- Delaying submission likely to linearly extend the course of our search for GW
- We are reasonably well prepared
 - » Reference design
 - » R&D in motion
 - » Could complete a cost estimate and schedule plan with a burst of effort
- Many LSC groups have focused on Adv. LIGO development
- International partners may prefer that we move forward

Arguments to Delay One Year

- No internal NSF advocate/champion/cooperating partner until Cook replacement is up to speed
- Initial LIGO has not yet had a useful coincidence run
- NSF leadership must be thoroughly briefed and supportive
- FY2003 funding prospects at NSF for Lab budget hard to judge
 - » Lab budget must ramp by 20% in 2003
 - » NSF agrees to this
 - » Can they fulfill this intent given White House/Congress actions for 2003?
- Very strong pressure on LIGO Lab staff to succeed with initial LIGO
- Overall priorities and climate in Washington uncertain and volatile
- When we submit, we have to be confident of success

Discussions

- Nov. 16 LSC Exec Committee
- Nov. 19 Lab Exec Committee
- Nov. 29 – 30 LIGO Program Advisory Committee
- Discussions with GEO partners