



The View from NSF

LSC - Livingston, LA 20–23 Mar 2002

B. K. Berger

- **Funding prospects**
- **The LIGO/LSC Reviews**
- **MREFC for Advanced LIGO**
- **NSF Gravity Program Staff**
- **Source Simulations for LIGO and LISA**

LIGO-G020030-00-0



What about FY2002 ???

- Good news and bad
- Gravity budget still uncertain

Budget numbers (3/02) (\$Million)

	NSF	MPS	PHY	Gravity
FY2001	4416	850.8	187.5	32.5
FY2002	4789	922	195.9	37.5??
$\Delta(\%)$	8.4	8.4	4.5	15.4??



Where has all the money gone?

- All of the increase for Physics goes to initiatives and facilities.
- More than the increase for Gravity goes to the LIGO lab.

	GP All	LIGO	LSC	Other	CGWP
FY2001	32.5	21.8	4.98	5.71	
FY2002	37.5	28.0	4.41	5.06	1.0
$\Delta(\%)$	15.4	28.4	-11.4*	-11.4*	
Needs			5.57	5.76	

*Not counting Physics Division reserves. All core programs were cut 11.4% to support facilities and initiatives. The most optimistic scenario on the reserves will still leave a shortfall.



FY 2003

- Budget request has been submitted to Congress.

	NSF	MPS	PHY	Gravity
FY2002	4789	922	195.9	35.7
FY2003	5036	942	191.3	?
$\Delta(\%)$	5.1	2.2	-2.3	?

Request includes an increase for the LIGO Laboratory.



LIGO/LSC Reviews

- We are in the process of setting up the LIGO annual review.
- The Review Panel to evaluate FY 02 LSC proposals will meet March 27-28.



MRE for Advanced LIGO

- Advanced LIGO is on Physics Division list of “pipeline” MREFC projects.
- MREFC eligibility requires a project’s total cost cost to be at least 10% of MPS budget (threshold now \approx \$92 M).
- We await a proposal.



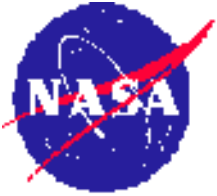
NSF Gravity Program Staffing

- Rich Isaacson retired as Gravity Program Director, replaced by Beverly Berger.
- The new LIGO Program Director will start at NSF on April 7 (if all goes well).
- Tom Lucatorto heads the Photon Physics Group at NIST.
 - Measurement and Correction of Optical Properties
 - Synchrotron Radiation Instrumentation
 - EUV & X-ray Microscopy
 - EUV Transfer Standard Photodiode Calibrations



NASA/NSF Collaboration on Gravitational Wave Theory

- Gravitational wave computation task group
- What resources are needed?
- How can source simulation research meet LIGO and LISA needs effectively?
- Take advantage of national interest in NASA/NSF coordination.
- Why not ITR (existing NSF program)?



Office of Space Science
Associate Administrator: Dr. Ed Weiler

Sun-Earth Connection
Division Director:
Dr. Dick Fisher

Astronomy & Physics
Division Director:
Dr. Anne Kinney

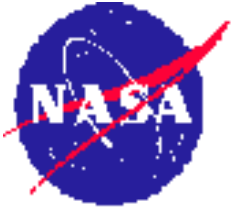
**Solar System
Exploration**
Division Director:
Dr. Colleen Hartman

Discipline Scientists

Fundamental Physics
Dr. Michael Salamon

General Relativity/Gravity
Cosmology (CMB, ...)
Fundamental laws (time variation of fund.constants,...)

LISA
Gravity Probe B



NSF/NASA Task Group Issues

- What are the major science products (gravitational waveforms, signal extraction algorithms, estimates of astrophysical GW source rates) that the LIGO/LISA community needs, and on what time scales are these products required?
- Is the current community size adequate to meet these needs? If not, what rampup rates are suggested?
- What additional computational infrastructure will be needed? How should this infrastructure be configured? What process for distribution of cycles?
- What are the cost estimates for the above?
- Where do GR-computation PhDs go if they do not remain in the field? How does the production of significant numbers of PhDs with computational expertise benefit the nation?

Nota bene: *Small* amounts of funding are available for waveform calculations and source rate estimates from NASA's Astrophysics Theory Program; see http://research.hq.nasa.gov/code_s/nra/current/NRA-02-OSS-01/index.html



NASA/NSF Task Group

- Membership
 - Saul Teukolsky, Chair
 - Patrick Brady, Joan Centrella, Pablo Laguna, Albert Lazzarini, Fred Rasio, Kip Thorne
 - Barry Barish (ex officio), Tom Prince (ex officio)



NASA/NSF Task Group

Charge:

- What are the most urgent needs for LIGO and LISA in the area of theory involving large-scale computing? In what time frame?
- How does the current state-of-the-art in these theoretical areas compare to the needs?
- What are the major science products that the LIGO/LISA GW community needs?
- What changes in the demographics of the numerical relativity, data analysis, and source astrophysics groups will be needed to meet LIGO and LISA needs over the next 5-10 years?
- What, if any, additional resources will be required to support this (growing) community?
- What additional computational infrastructure will be needed? How should this infrastructure be configured (Beowulf clusters, single mainframes, GRID protocols, etc)?
- Not all PhD students will remain in academia. What is the general value of training in this area? How does the production of significant numbers of PhDs with computational expertise benefit the nation?

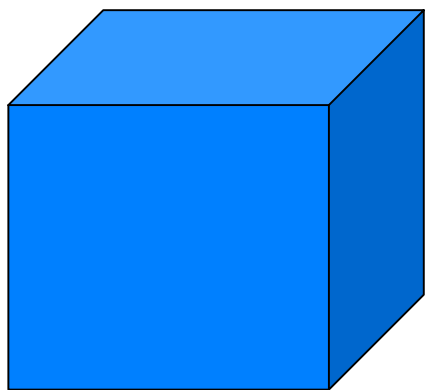


NSF ITR Program Description

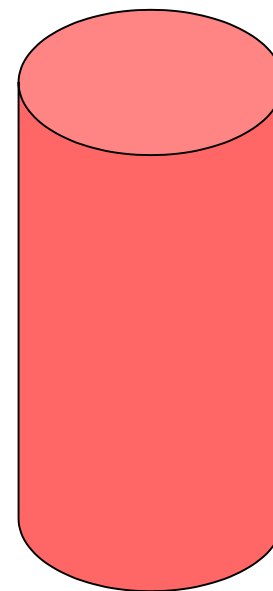
- In FY2002, NSF's ITR (information technology research) investments will be focused in three multidisciplinary areas: **software and hardware systems**; augmenting individuals and transforming society; **and advancement of the frontiers of science via information technology**....
- **Physics Division receives a special allocation for ITR.**



Gravitational Wave Source Simulations



Data analysis



Source simulation



Gravitational Wave Source Simulations

