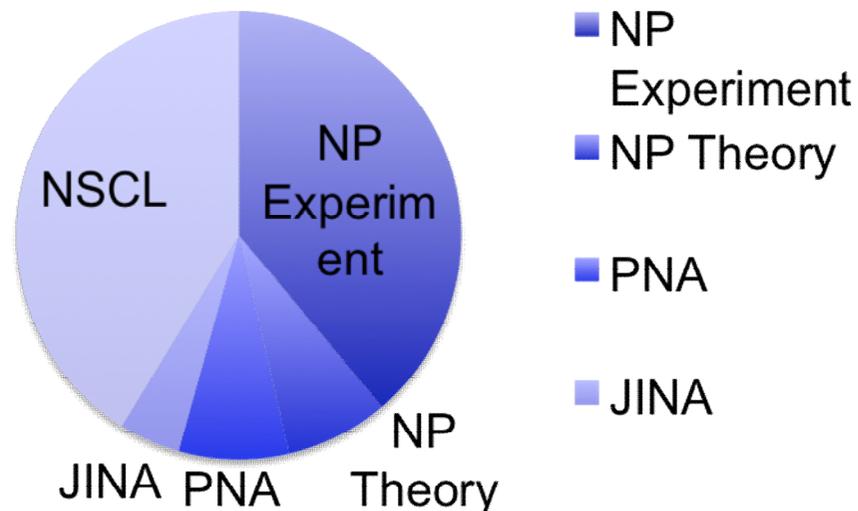
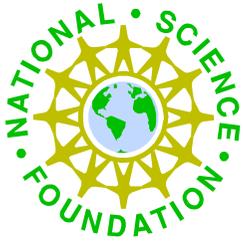


# Nuclear Physics at NSF

- NP Experiment
  - Structure
  - Heavy Ions
  - Symmetries
  - Hadrons and QCD
- NP Theory
- Particle and Nuclear Astrophysics
  - Astrophysics (Notre Dame, FSU)
  - Neutrinos (Borexino,  $0\nu\beta\beta$ ,  $\theta_{13}$ ), Dark Matter
- Physics Frontier Center (Joint Institute for Nuclear Astrophysics)
- NSCL
- FY2010 total: > \$49M



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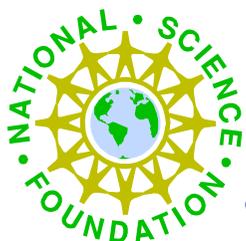


# Additional Funding

- Major Research Instrumentation (MRI)
  - small (<\$1M); large (\$1-4M)
  - annual average about \$1.6M
  - awards to university labs & user groups at national labs
- Cyber-Enabled Discovery and Innovation (CDI)
  - 5-year initiative begun FY2008
  - plan: +\$50M/year, totaling \$750M
  - 1 NP-related award in FY08 (U Washington)
- DHS Domestic Nuclear Detection Office
  - multi-year initiative begun FY2007
  - 3 NP-related awards
- Physics Frontier Centers (PFC)
  - must be cutting edge physics
  - make the case for being a CENTER



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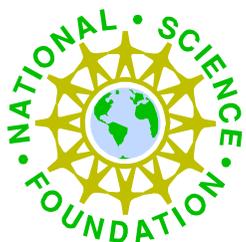
# Additional Funding

- Major Research Instrumentation (MRI)
  - FY10 review in progress
- Cyber-Enabled Discovery and Innovation (CDI)
  - FY10 review in progress
- DHS Domestic Nuclear Detection Office
  - FY10 review in progress
- Physics Frontier Centers (PFC)
  - must be cutting edge physics
  - make the case for being a CENTER *ie that the collective efforts of a larger group of individuals can enable transformational advances in the most promising research areas*
  - every 3 years: *preliminary proposal due date August 11, 2010*  
*full proposal deadline January 25, 2011*

**Contact NSF program directors before submitting proposals!**



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# NSF-GPRA Interface

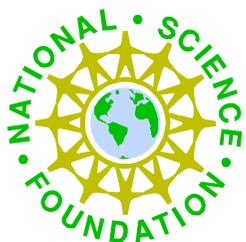
- Merit review process
- Committee of Visitors
  - every 3 years; January 2009
  - evaluation includes
    - proposal decision process
    - program balance
    - degree of risk taking
  - report and response available: [www.nsf.gov/mps/advisory/cov.jsp](http://www.nsf.gov/mps/advisory/cov.jsp)
- Highlights → [research.gov](http://research.gov) soon
  - written for non-physicists
  - snazzy figures
  - **KEEP THEM COMING!**



Zero Milestone in DC

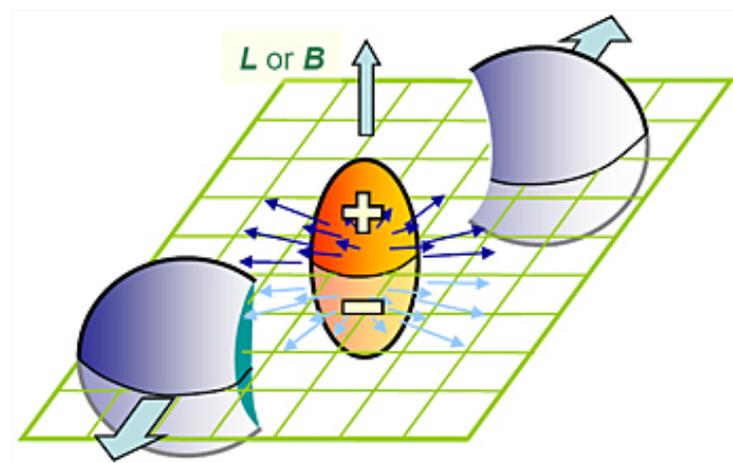
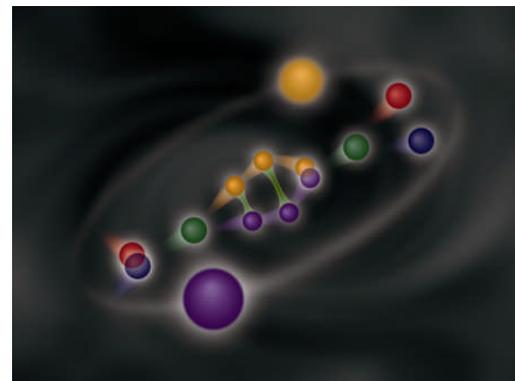


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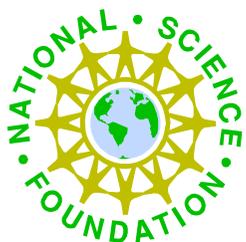


# Highlights Overview

- muonium
- neutrino coherence on cosmological scales
- $^{24}\text{O}$  a magic nucleus
- local strong parity violation studies at RHIC

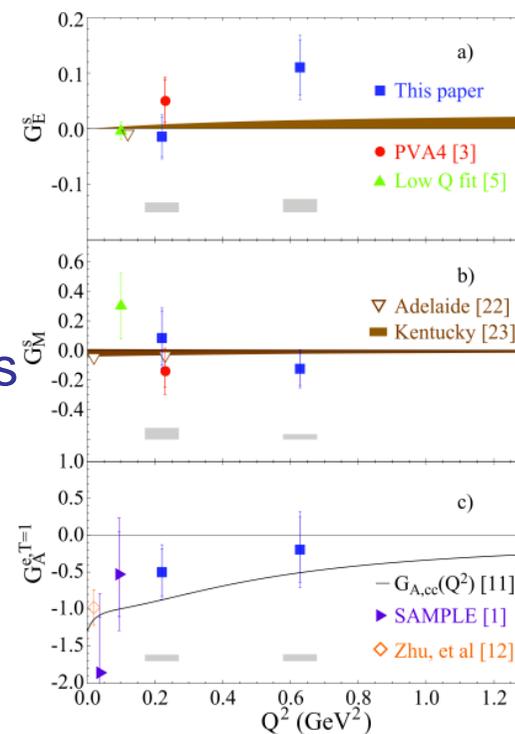
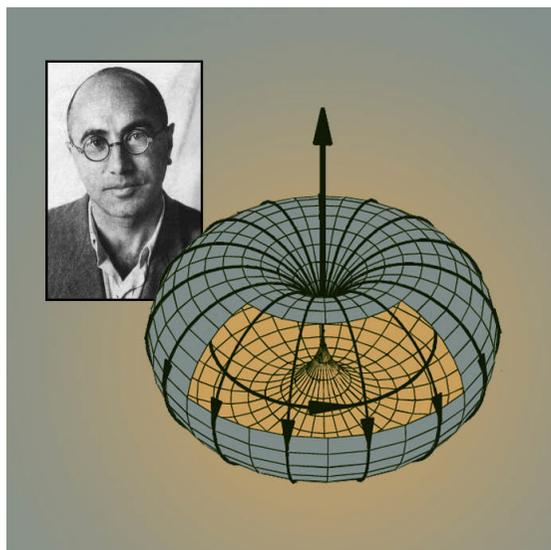


June 7- 11, 2010

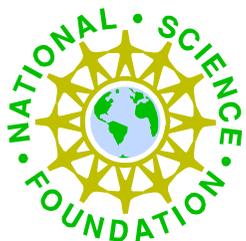


# Highlights Overview

- G0 backward angle results
- on-campus outreach
- parity violation in Ytterbium
- neutron interferometry and few-nucleon systems



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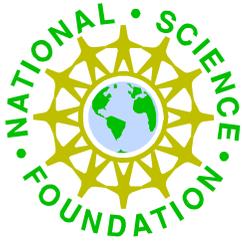


# Nuclear Physics FY2010

- NSCL
  - Restore trajectory toward optimal operations
  - NSCL → FRIB
    - > Joint Oversight Group (JOG) formed
    - > Help agencies coordinate present operations and future transitions
- Nuclear Theory & Experiment and Nuclear Astrophysics Programs
  - Focus on PI program



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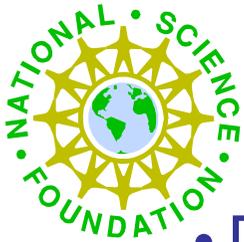


# The DUSEL Science Program

- Solicitation 4 (S4): R&D for *potential* candidates of integrated suite of experiments
  - o 25 proposals received, 300 senior researchers, 91 institutions
  - o 9 proposals funded by PHY – \$21M / 3 years
  - o 7 proposals funded by BIO, GEO, ENG Sciences – \$3M / 3 years
- Broad program (Stewardship/Participation)
  - o  $0\nu\beta\beta$  Decay (DOE-NP / NSF)
  - o Dark Matter (NSF / DOE)
  - o Long Baseline Neutrinos & Proton Decay (DOE-HEP / NSF)
  - o Additional Experiments ie UG Accel & BGEs (NSF / DOE)
  - o Facility (Stewardship: NSF)
  - o Stewardship = (fund > 51%) .AND. (oversight responsibility)



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# DUSEL Oversight and Overview

- DUSEL Physics Joint Oversight Group

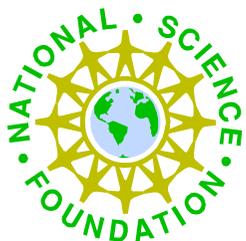
- o formed in May 2008 by NSF and DOE
- o modeled after successful NSF/DOE LHC JOG
- o will oversee all DUSEL physics activities
- o co-chairs
  - NSF Physics Division Director (Joe Dehmer)
  - DOE ONP Associate Director (Tim Hallman)
  - DOE OHEP Associate Director (Denise Kovar)
- o meets ~ monthly + Working Groups (DM,  $\beta\beta$ , LBNE)

- Research Campuses

- o surface campus (~27,000 m<sup>2</sup> / 1100 m<sup>2</sup> total/assembly)
- o 4850L (~25,000 m<sup>2</sup> / 10,000 m<sup>2</sup> total/science)
  - 1 lg cavity + 4 or 5 PHY expt's + Earth Sci expt's
- o 7400L (~5,000 m<sup>2</sup> / 1800 m<sup>2</sup> total/science)
  - 2 PHY expt's + Earth Sci expt's
- o other levels and ramps (~ 39 km: ~50/50 ops/sci)



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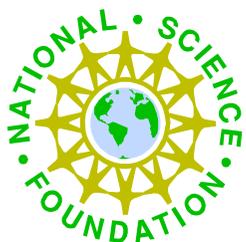
# DUSEL Target Timeline for MREFC

- **January '09: NSF Project Review #1**
- **September '09: NSB approves \$29M for Preliminary Design**
- **February '10: NSF Project Review #2**
- **December '10: NSF Preliminary Design Review (PDR).**
- **Spring '11: Presentation of DUSEL MREFC proposal to National Science Board**

**Above targets an FY 2014 construction start.**



**June 7- 11, 2010**

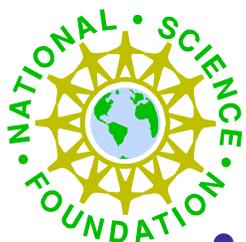


## FY2008-11 Summary

- FY2008 R&RA: \$4.827B
- FY2009 R&RA: \$5.183B (FY08 + 7%)
  - NP experiment: up 0.5% NP theory: up 4.5%
  - NSCL: \$19.5M ... \$20.5M (toward optimal ops)
- Recovery Act: \$3B
  - NP (experiment + theory) ~ \$12M
- FY2010 R&RA: \$5.618B (FY09 + 8.4%)
  - NP experiment: up 4.3% NP theory: up 9.2%
  - NSCL: \$21.0M
- FY2011 (total) request: \$7.424B



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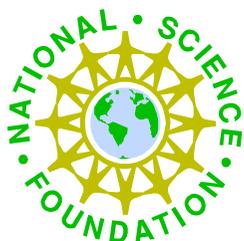


# FY2009 Recovery Act

- [www.nsf.gov/recovery](http://www.nsf.gov/recovery)
- PHY implementation of investigator programs
  - make some “standard” awards with program funds frees up out-year commitments
  - spreads out positive impact of Recovery Act funds
  - *can only work long-term with increased appropriations*
- MRI-R<sup>2</sup>
  - PHY: 13 awards, total of \$16.5M
  - NP: 4 awards, total of \$4.9M
    - > CNU+ODU longitudinally polz'd p and d tgt for CLAS
    - > Hampton U luminosity telescopes for OLYMPUS
    - > IUSB detector system for St George Separator at ND
    - > MSU gas-filled cyclotron stopper



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# FY2011 R&RA Budget Request

## R&RA Funding

(Dollars in Millions)

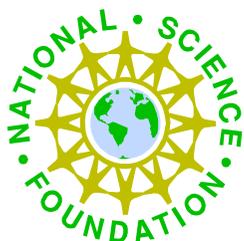
	FY 2009	FY 2009	FY 2010 Estimate	FY 2011 Request	Change over	
	Omnibus	ARRA			FY 2010 Estimate	
	Actual	Actual			Amount	Percent
Biological Sciences	\$656.62	\$260.00	\$714.54	\$767.81	\$53.27	7.5%
Computer & Information Science & Engineering	574.50	235.00	618.83	684.51	65.68	10.6%
Engineering	664.99	264.99	743.93	825.67	81.74	11.0%
Geosciences	808.53	347.00	889.64	955.29	65.65	7.4%
Mathematical & Physical Sciences	1,243.88	474.97	1,351.84	1,409.91	58.07	4.3%
Social, Behavioral & Economic Sciences	240.56	84.97	255.25	268.79	13.54	5.3%
Office of Cyberinfrastructure	199.23	80.00	214.28	228.07	13.79	6.4%
Office of International Science & Engineering	47.45	13.98	47.83	53.26	5.43	11.4%
Office of Polar Programs <sup>1</sup>	473.55	171.89	451.16	527.99	76.83	17.0%
Integrative Activities	241.58	129.85	275.04	295.93	20.89	7.6%
U.S. Arctic Research Commission	1.50	-	1.58	1.60	0.02	1.3%
<b>Total, R&amp;RA</b>	<b>\$5,152.39</b>	<b>\$2,062.64</b>	<b>\$5,563.92</b>	<b>\$6,018.83</b>	<b>\$454.91</b>	<b>8.2%</b>

Totals may not add due to rounding.

<sup>1</sup> Funding for FY 2010 excludes a one-time appropriation transfer of \$54.0 million to U.S. Coast Guard per P.L. 111-117.



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# FY2011 MPS Budget Request

## Mathematical and Physical Sciences (MPS) Funding

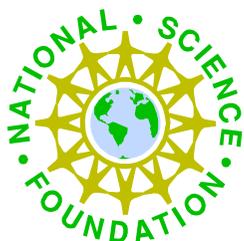
(Dollars in Millions)

	FY 2009	FY 2009	FY 2010	FY 2011	Change Over	
	Omnibus Actual	ARRA Actual			FY 2010 Estimate	FY 2011 Request
Astronomical Sciences	\$228.67	\$85.80	\$245.69	\$251.77	\$6.08	2.5%
Chemistry <sup>1</sup>	211.67	87.36	233.73	247.56	13.83	5.9%
Materials Research	282.52	108.17	302.67	319.37	16.70	5.5%
Mathematical Sciences	224.84	97.34	241.38	253.46	12.08	5.0%
Physics	262.47	96.30	290.04	298.19	8.15	2.8%
Office of Multidisciplinary Activities	33.70	-	38.33	39.56	1.23	3.2%
<b>Total, MPS</b>	<b>\$1,243.88</b>	<b>\$474.97</b>	<b>\$1,351.84</b>	<b>\$1,409.91</b>	<b>\$58.07</b>	<b>4.3%</b>
Research	840.82	357.50	911.09	972.35	61.26	6.7%
Education	61.68	44.71	65.54	65.01	-0.53	-0.8%
Infrastructure <sup>1</sup>	322.58	72.76	353.73	349.10	-4.63	-1.3%
Stewardship	18.80	-	21.48	23.45	1.97	9.2%

Totals may not add due to rounding.



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# FY2011 Physics Division Budget Request

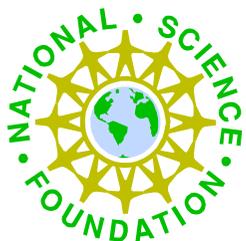
## Physics (PHY) Funding

(Dollars in Millions)

	FY 2009 Omnibus Actual	FY 2009 ARRA Actual	FY 2010 Estimate	FY 2011 Request	Change Over FY 2010 Estimate Amount	Percent
<b>Total, PHY</b>	<b>\$262.47</b>	<b>\$96.30</b>	<b>\$290.04</b>	<b>\$298.19</b>	<b>\$8.15</b>	<b>2.8%</b>
<b>Research</b>	<b>156.11</b>	<b>88.93</b>	<b>173.79</b>	<b>193.54</b>	<b>19.75</b>	<b>11.4%</b>
<i>STC: Center for Biophotonics Science &amp; Eng.</i>	3.96	-	3.28	2.62	-0.66	-20.1%
<i>Nanoscale Sci. Eng. Centers</i>	2.40	-	2.40	1.14	-1.26	-52.5%
Education	6.91	4.08	9.42	10.61	1.19	12.6%
Infrastructure	95.47	3.29	102.65	89.30	-13.35	-13.0%
<i>Cornell High Ener. Synchr. Source (CHESS)/     Cornell Electron Storage Ring (CESR)</i>	8.50	1.29	-	-	-	N/A
<i>Large Hadron Collider</i>	18.00	-	18.00	18.00	-	-
<i>Large Interfer. Grav. Wave Observatory (LIGO)</i>	30.30	-	28.50	30.30	1.80	6.3%
<i>Nat'l Superconducting Cyclotron Lab (NSCL)</i>	20.50	2.00	21.00	21.50	0.50	2.4%
<i>Ice Cube</i>	2.16	-	2.15	2.50	0.35	16.3%



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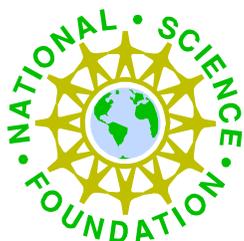
# People

prior to 1-jun-2010

- NSF Director: Arden Bement
- NSF Deputy Director: Cora Marrett (acting)
- MPS Assistant Director: Ed Seidel
- Physics Division Director: Joe Dehmer
- Nuclear Physics:
  - Brad D Keister (expt and theory)
  - AKO (and astro, underground lab)



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# People

## post 1-jun-2010

- Former NSF Director: Arden Bement (term ended 30-may-2010)
- NSF Director: Cora Marrett (acting)
- NSF Director: Subra Suresh (to be confirmed)
- MPS Assistant Director: Ed Seidel
- Physics Division Director: Joe Dehmer
- Nuclear Physics:
  - Brad D Keister (expt and theory)
  - AKO (and astro, underground lab) till August 17



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