

Astrophysics Research Programs

NASA Advisory Council Astrophysics Subcommittee

17 April 2013

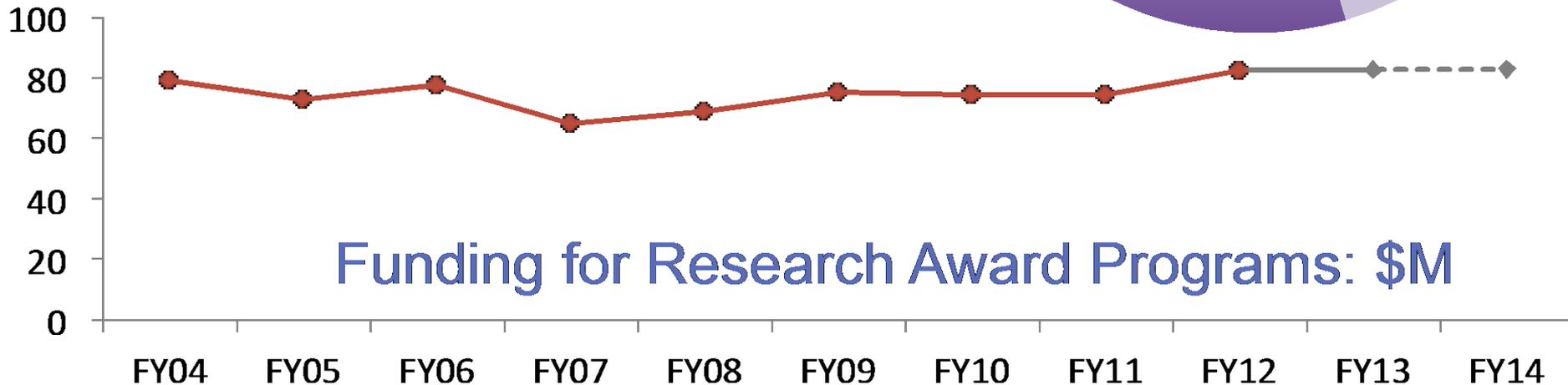
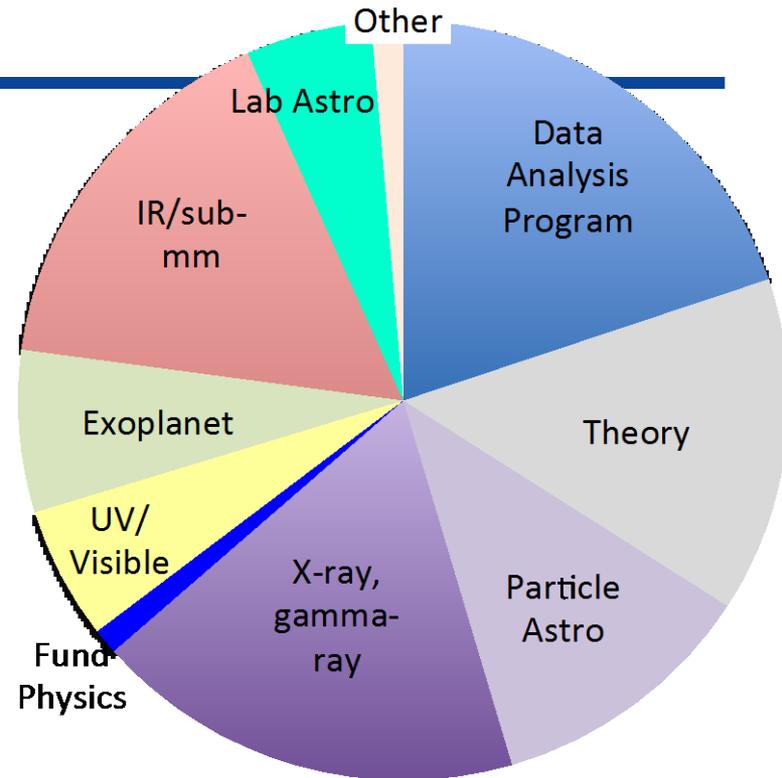
Linda Sparke
Research Program Manager
Astrophysics Division

Research Program Budget and Spending

Most recent competitions

	Proposals Year-1		Last Year	
	Rec'd	\$M	Success	\$M
APRA-11	162	11.7	27%	10.7
SAT-11	10	8	21%	7.9
ADAP-12	291	8.7	31%	6.2
OSS-12	46	1.8	26%	0.8
ATP-12	181	3.9	15%	4.4
RTF-12	12	0.4	17%	0.6

\$82.56M spent in FY12 on PI award programs + management overhead



Funding History for Research Awards

Amounts in \$k	FY04 Final	FY05 Final	FY06 Final	FY07 Final	FY08 Final	FY09 Final	FY10 Final	FY11 Final	FY12 Final	FY13	FY14 Request
Particle Astro	\$ 8,544	\$ 7,671	\$ 8,544	\$ 7,631	\$ 6,672	\$ 8,201	\$ 8,260	\$ 8,243	\$ 9,375		
High Energy	\$14,779	\$13,693	\$14,779	\$12,782	\$12,406	\$13,886	\$14,110	\$13,911	\$14,943		
UV/Opt/IR/ Sub-mm	\$21,851	\$18,742	\$21,851	\$17,442	\$19,094	\$22,353	\$21,534	\$21,295	\$23,378		
Other	\$ 338	\$ 854	\$ 338	\$ 394	\$ 594	\$ 670	\$ 673	\$ 641	\$ 2,018		
APRA Total	\$45,511	\$40,960	\$45,511	\$38,250	\$38,765	\$45,110	\$44,577	\$44,090	\$50,573		
Orig Solar Systems	\$ 4,150	\$ 3,872	\$ 4,150	\$ 3,673	\$ 2,965	\$ 3,000	\$ 2,807	\$ 2,944	\$ 3,244		
Astro Theory	\$10,245	\$ 7,363	\$10,245	\$10,227	\$11,696	\$11,890	\$12,262	\$12,148	\$11,816		
Tech Fellows									\$ 538		
R&A (399131)	\$59,906	\$52,195	\$59,906	\$52,150	\$53,426	\$60,000	\$59,646	\$59,611	\$66,172		\$65,615
ADAP/LTSA	\$15,189	\$15,700	\$15,189	\$12,641	\$12,013	\$14,384	\$13,258	\$14,132	\$16,365		\$17,008
Core R&A	\$75,095	\$67,895	\$75,095	\$64,791	\$65,439	\$74,384	\$72,904	\$73,743	\$82,537		\$82,623
TPF/FS		\$ 2,000		(Foundation							
Beyond Einstein FS	\$ 2,000	\$ 3,000	\$ 2,000	Science: now in ATP)							
ASMCS (399131) Mission concept studies					\$ 3,452	\$ 442					
Experimental Fundamental Physics: now in APRA							\$ 968	\$ 613	\$ 860		
TOTAL (\$M)	\$ 77.10	\$ 72.90	\$ 77.10	\$ 64.79	\$ 68.89	\$ 74.83	\$ 73.87	\$ 73.93	\$ 82.54	~\$82M	\$ 82.62
		\$7M cut	smaller R&A cut	15% cut	partial recovery	more R&A recovery	flat	flat	growth!	growth retained	so far, so good...

Funding for research awards increased by 9% in FY12, in response to Astro2010 Decadal Survey recommendations; this growth was retained in the FY14 request

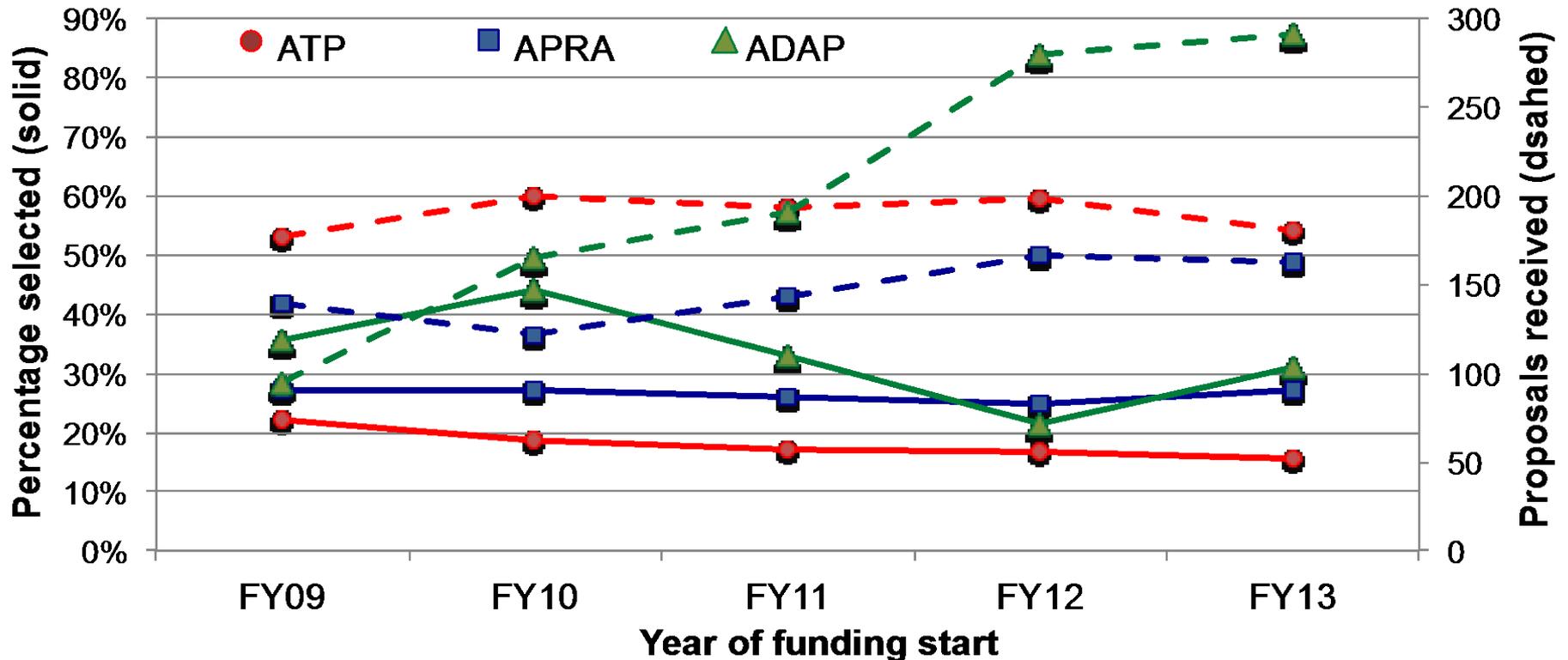
Astrophysics ROSES Competitions

	Due Date	Notification	Days	Rec'd	Selected	Success	Year-1
		from due date					Award \$M
ROSES-2012							
Strategic Astrophysics Technology	22-Mar-13		26	39	↓		
Astrophysics Research and Analysis	22-Mar-13		26	182	↑		
Elements with NEW STARTS IN FY14				221	⊖		
Theory & Comp Networks (with NSF)	14-Feb-13		62	101			
Roman Tech Fellowships: Stage 2	1-Feb-13		75	3			
Fermi Guest Investigator -- Cycle 6	18-Jan-13		89	233	→		
Kepler Guest Observer - Cycle 5	18-Jan-13	15-Apr-13	87	63	→	25	40% 1.0
Roman Technology Fellowships	8-Nov-12	5-Mar-13	117	12	→	2	17% 0.4
Swift Guest Investigator -- Cycle 9	26-Sep-12	18-Dec-12	83	158	→	45	28% 1.2
Euclid Science Team	31-Aug-12	7-Nov-12	68	8		3	38% —
Astrophysics Theory	13-Jul-12	6-Dec-12	146	181	→	28	15% 3.9
Origins of Solar Systems	25-May-12	18-Oct-12	146	46	↑	12	26% 1.8
Astrophysics Data Analysis	18-May-12	17-Sep-12	122	291	→	90	31% 8.7
ROSES-2011							
Strategic Astrophysics Technology	23-Mar-12	30-Aug-12	160	48		10	21% 8.0
Astrophysics Research and Analysis	23-Mar-12	3-Aug-12	133	162	→	43	27% 11.7
Elements with NEW STARTS IN FY13			weighted mean =	122	969	258	27% 36.7
Core (Non-GO) solicitations				134	740	185	25% 34.5
Guest Observer solicitations				84	229	73	32% 2.2

These reports now appear monthly at

<http://science.nasa.gov/about-us/smd-programs/astrophysics-research/>

Selection and Funding Trends



Funding (in \$M) for the fiscal year: awards funded in year N were selected in year N-1

ATP	\$11.9M	\$12.3M	\$12.6M	\$11.8M	~\$11M	+TCAN
APRA	\$45.1M	\$44.6M	\$44.1M	\$50.6M	~\$47M	
ADAP	\$14.4M	\$13.3M	\$14.1M	\$16.4M	~\$17M	
Total*	\$74.8M	\$73.9M	\$73.9M	\$82.5M	~\$82M	

* includes other R&A elements in addition to ATP, APRA, ADAP

Theory and Computation Networks: a Decadal Survey Recommendation

In October 2011, Thierry Lanz (NASA ApD) and Tom Statler (NSF AST) asked AAAC to consider what a Theory/Computational Networks program might look like:

AAAC members MacLow and Laughlin agreed to lead the effort. They talked with community members, and submitted a report in May 2012, posted at http://www.nsf.gov/events/event_summ.jsp?cntn_id=122569&org=AST

AAAC recommended 3-year awards of ~\$0.5M/year to groups with PIs at **3 or more institutions**, to focus on areas of greatest potential for progress: Astro2010 priority questions, and others. Review should evaluate effectiveness of the collaboration.

Proposals for TCAN (Theoretical and Computational Astrophysics Networks) were due 14 Feb 2013, for a total \$2M-\$3M of Year-1 funding from NASA+NSF

We received proposals for 29 investigations (**101 proposals**) through NSF Fastlane
Tom Statler is leading the review for NSF; NASA staff are Linda Sparke, Keith MacGregor and Joan Centrella.

Review will be at NSF using NSF's process (Fastlane, etc), with NASA staff present
NSF and NASA will select proposals for funding: investigations may be funded by one agency or by both, but each **proposal** will be funded by a single agency.

Astrophysics Theory: Timing for ATP-13

The selection rate for ATP-12 was 15% – proposal budgets have crept higher, and we aimed to fund proposals fully where that was justified.

Expected funding for research awards is flat: new programs (e.g. TCAN, Roman Technology Fellowships) must squeeze in alongside continuing programs.

For FY13 funding, APRA selections were made in August; ADAP selections in September; ATP selections in December. The budget outlook worsened over this period. Many ATP-12 winners did not need a funding start until FY14; we deferred FY13 funds due to other PIs if they could wait. This lien must be paid in FY14.

We have many more very good theory proposals than we can fund: over the past 4 ATP cycles, only ~35% of those rated VG or better have been selected.

ATP-13 proposals are now due 12 July 2013, selections in December (< 150 days) Delaying the due date to Nov (Dec) 2013, thus decisions in March (April) 2014, with most funding to start in FY15, would allow a higher success rate.

Considerations include student/postdoc hiring cycles, other proposal deadlines (e.g. NSF AAG), what else?

Backups

Nancy Grace Roman Technology Fellowships

These fellowships aim to

... give early career researchers the opportunity to develop the skills to lead astrophysics flight instruments/projects and become principal investigators (PIs) of future astrophysics missions;

... develop innovative technologies that have the potential to enable major scientific breakthroughs;

... foster new talent by putting early-career instrument builders on a trajectory towards long-term positions.

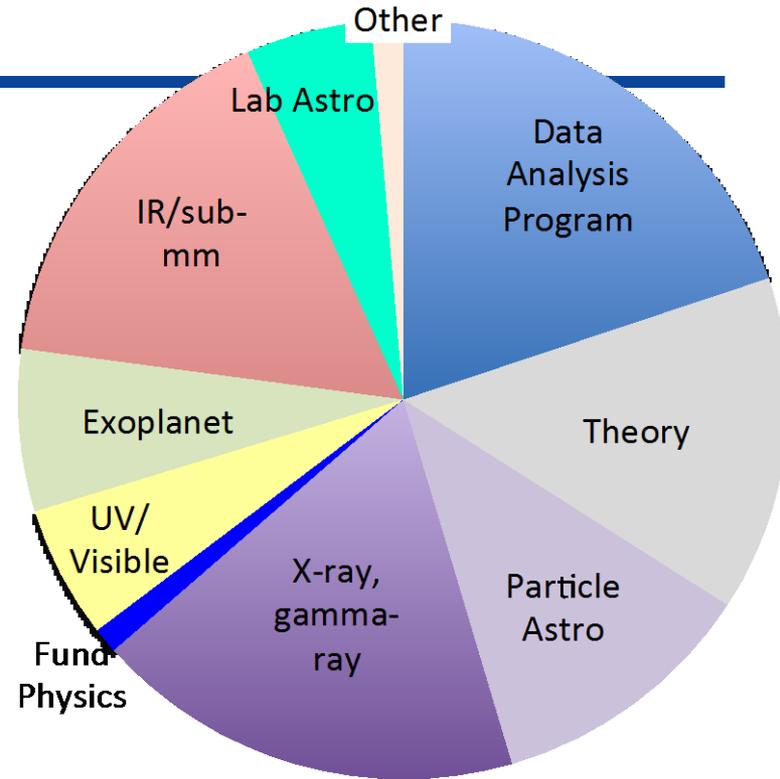
In November 2012 we received 12 proposals from early-career (<7 years since PhD) PIs in non-tenured positions (postdoc, tenure-track, etc.) for a one-year concept study to generate detailed plans and commitments for a 4-year development effort. We selected 2 concept studies.

In February 2013 we received reports (=plans for development, including institutional commitments to lab space, etc.) from last year's winners, for peer-review to select which should continue to development.

Research Program Budget and Spending

Most recent competitions

	Proposals	Year-1	
	Rec'd	\$M	Success
APRA-11	162	11.7	27%
SAT-11	10	8	21%
ADAP-12	291	8.7	31%
OSS-12	46	1.8	26%
ATP-12	181	3.9	15%
RTF-12	2	0.4	17%



\$82.56M spent in FY12: PI award programs + management overhead

