

# Status of TAP Experiments (2013 – 2016)

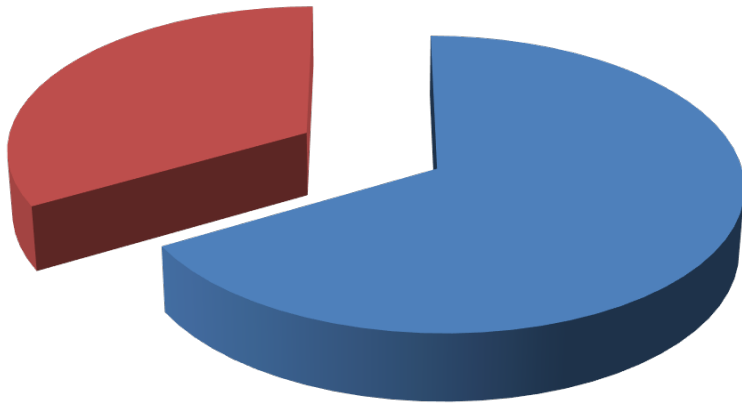
Users Meeting

LNL

13 October 2016

# Beam Time in 2013

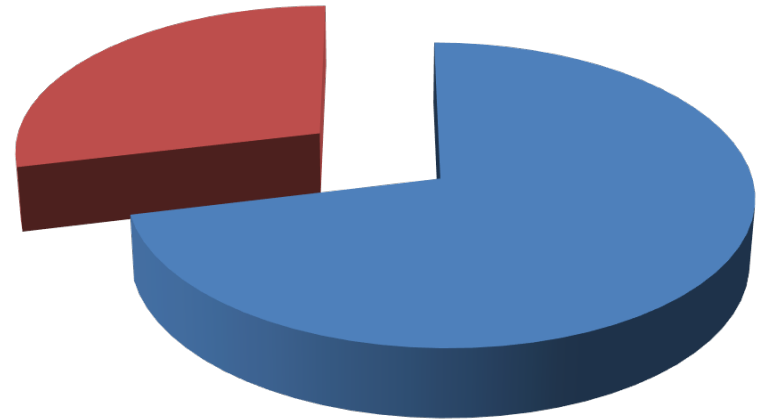
**Beam-Time Request (234)**



■ Nuclear Physics (156)

■ Applied Physics (78)

**Beam Time Approved (160)**

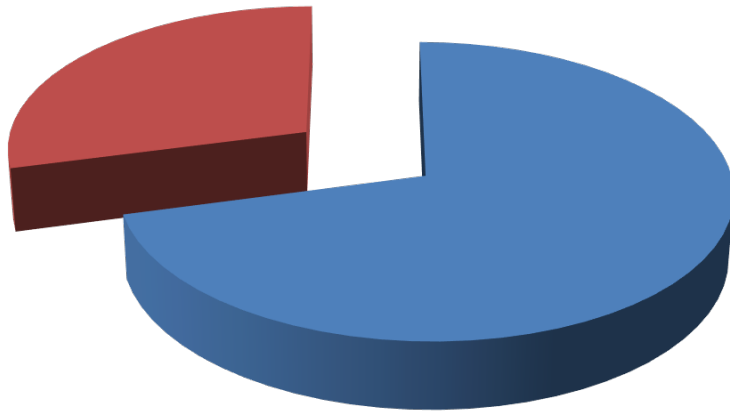


■ Nuclear Physics (114)

■ Applied Physics (46)

# Beam Time in 2014

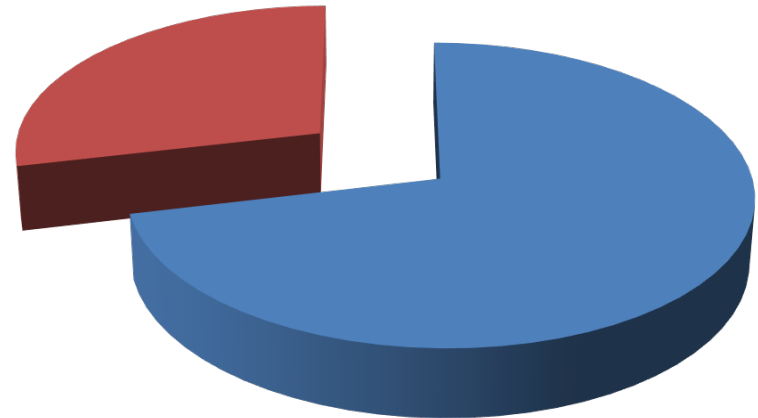
**Beam-Time Request (244)**



■ Nuclear Physics (171)

■ Applied Physics (71)

**Beam Time Approved (171)**

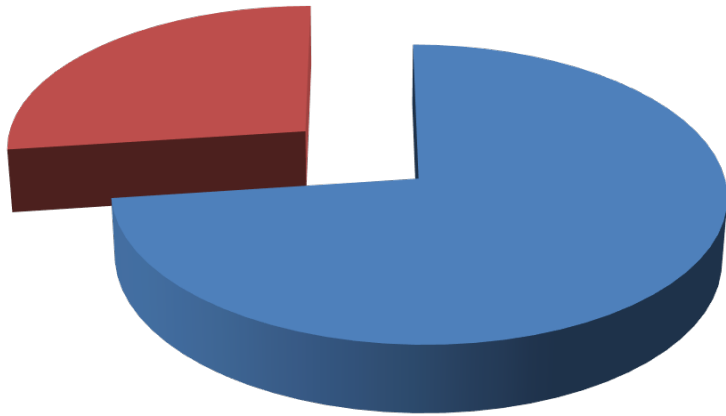


■ Nuclear Physics (122)

■ Applied Physics (49)

# Beam Time in 2015

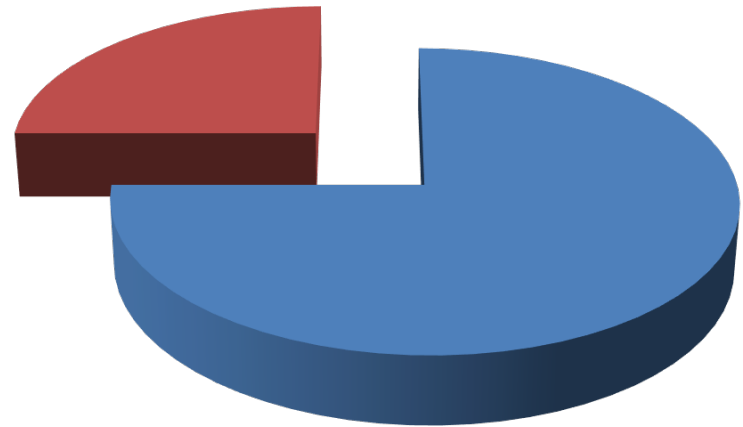
**Beam-Time Request (362)**



■ Nuclear Physics (264)

■ Applied Physics (98)

**Beam Time Approved (152)**

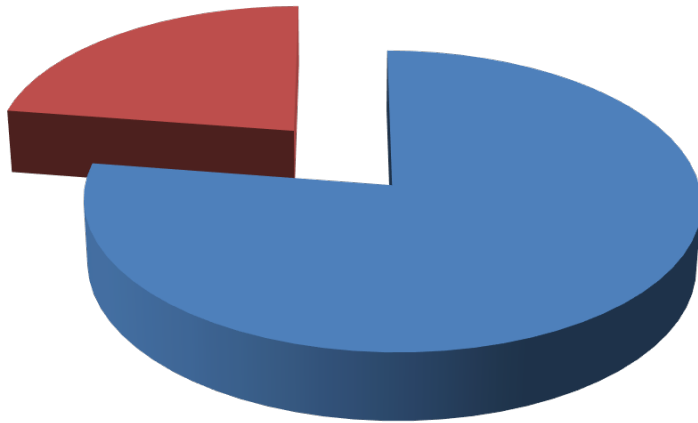


■ Nuclear Physics (114)

■ Applied Physics (38)

# Beam Time in 2016

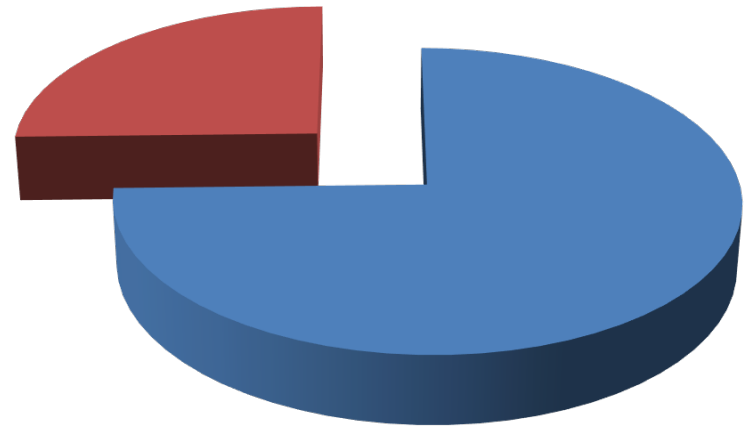
**Beam-Time Request (314)**



■ Nuclear Physics (264)

■ Applied Physics (98)

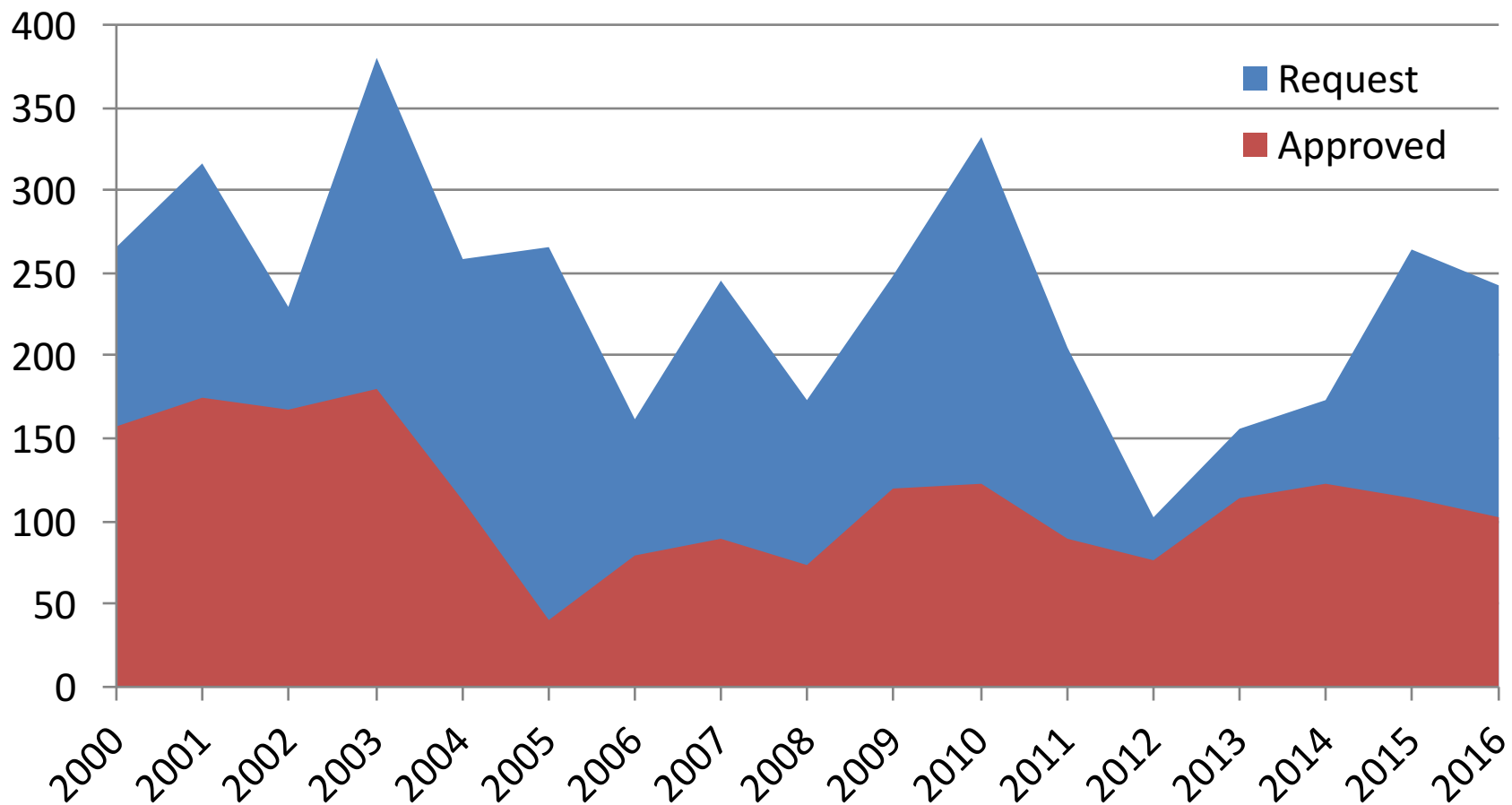
**Beam Time Approved (138)**



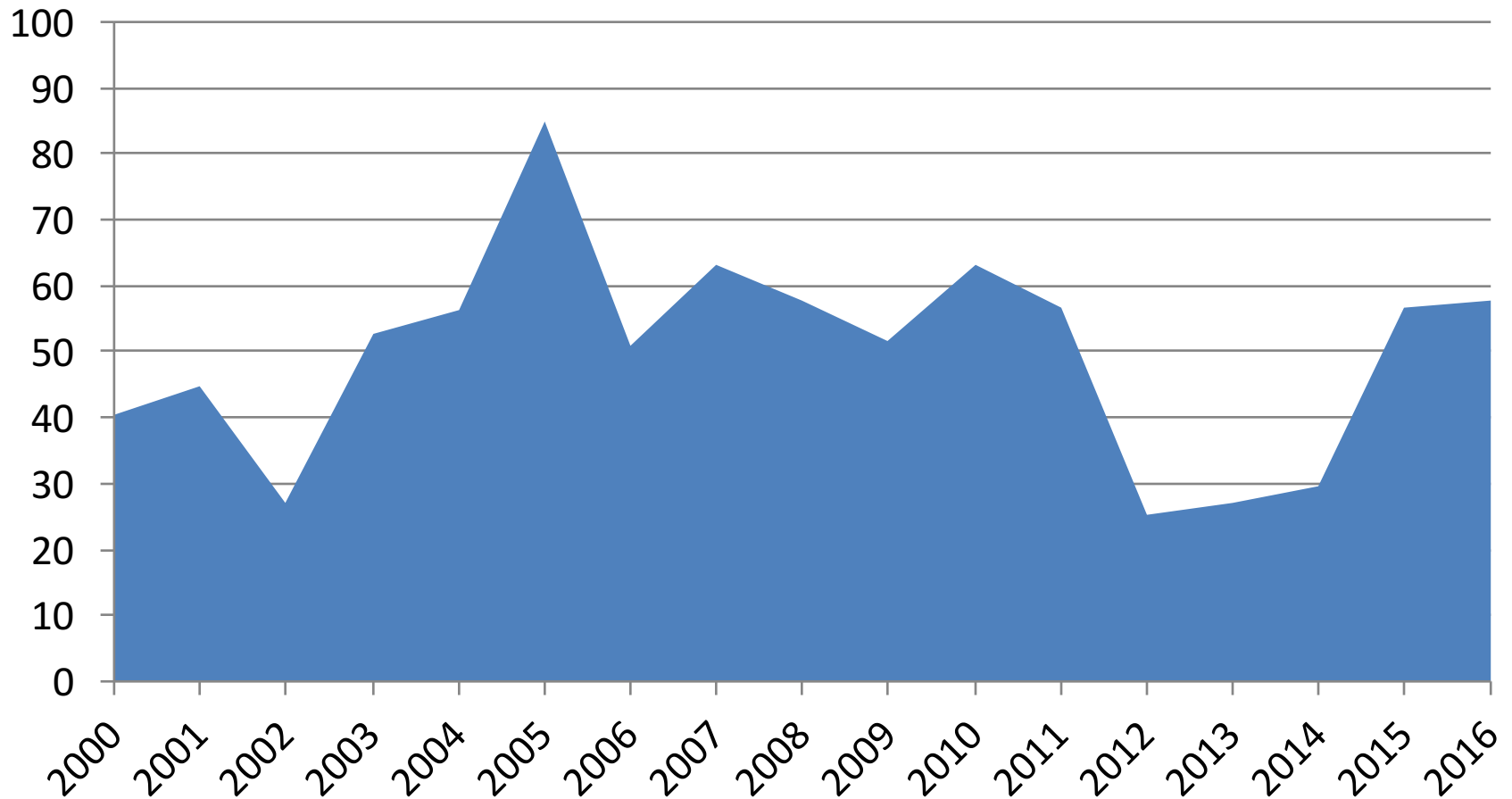
■ Nuclear Physics (103)

■ Applied Physics (35)

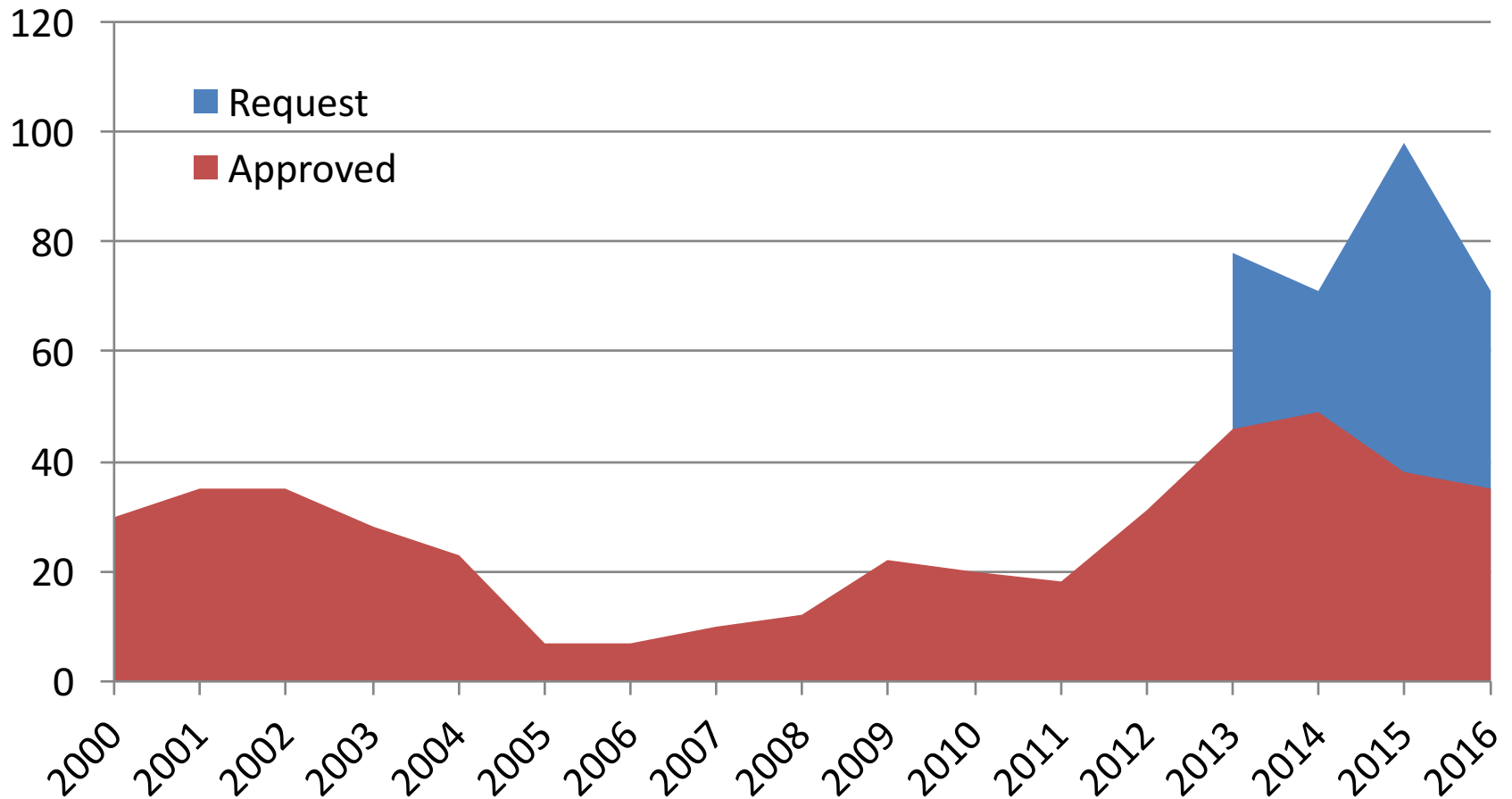
# Beam-Time Request: Nuclear Physics



# Rejection Factor: Nuclear Physics

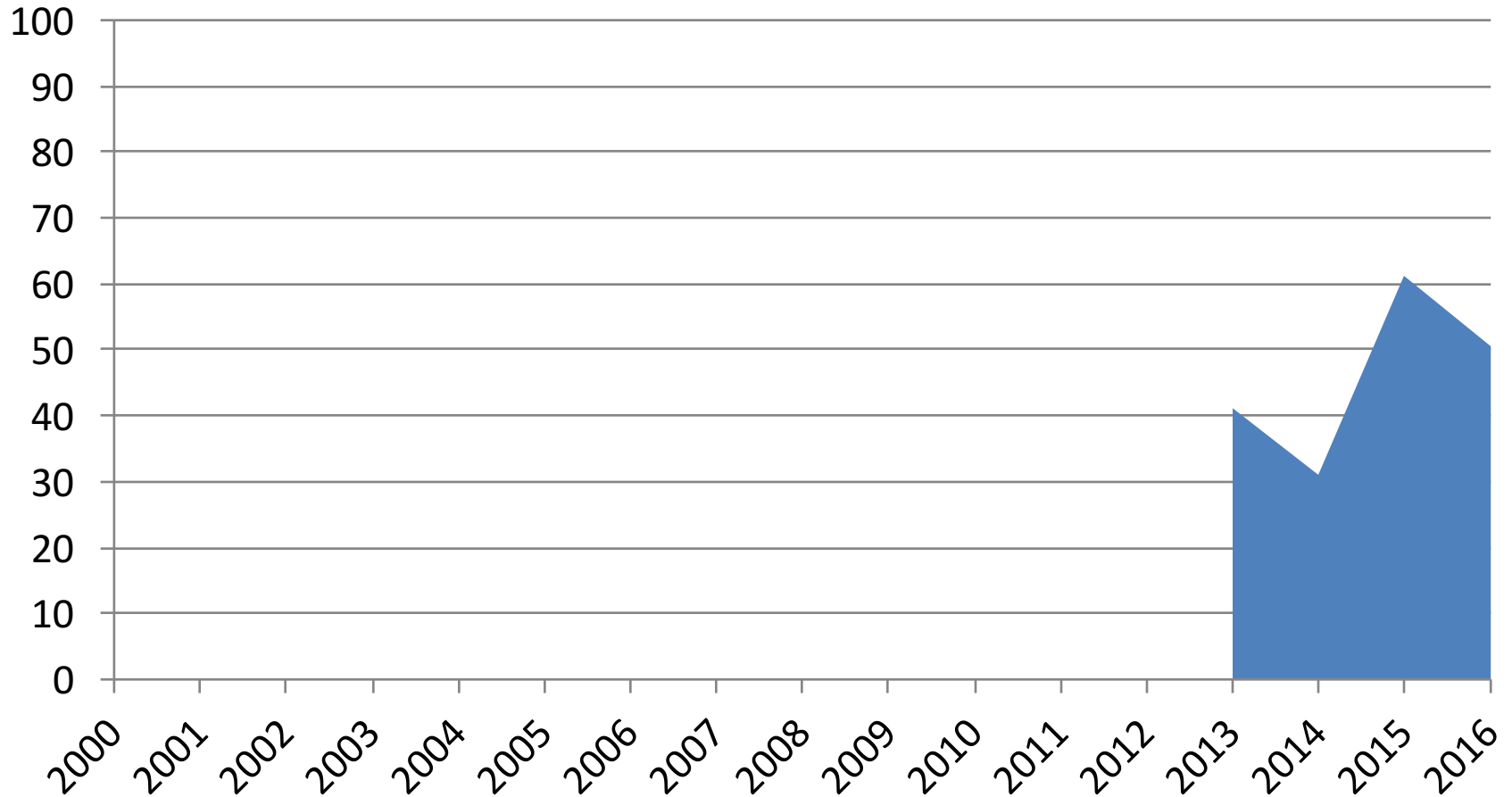


# Beam-Time Request: Applied Physics

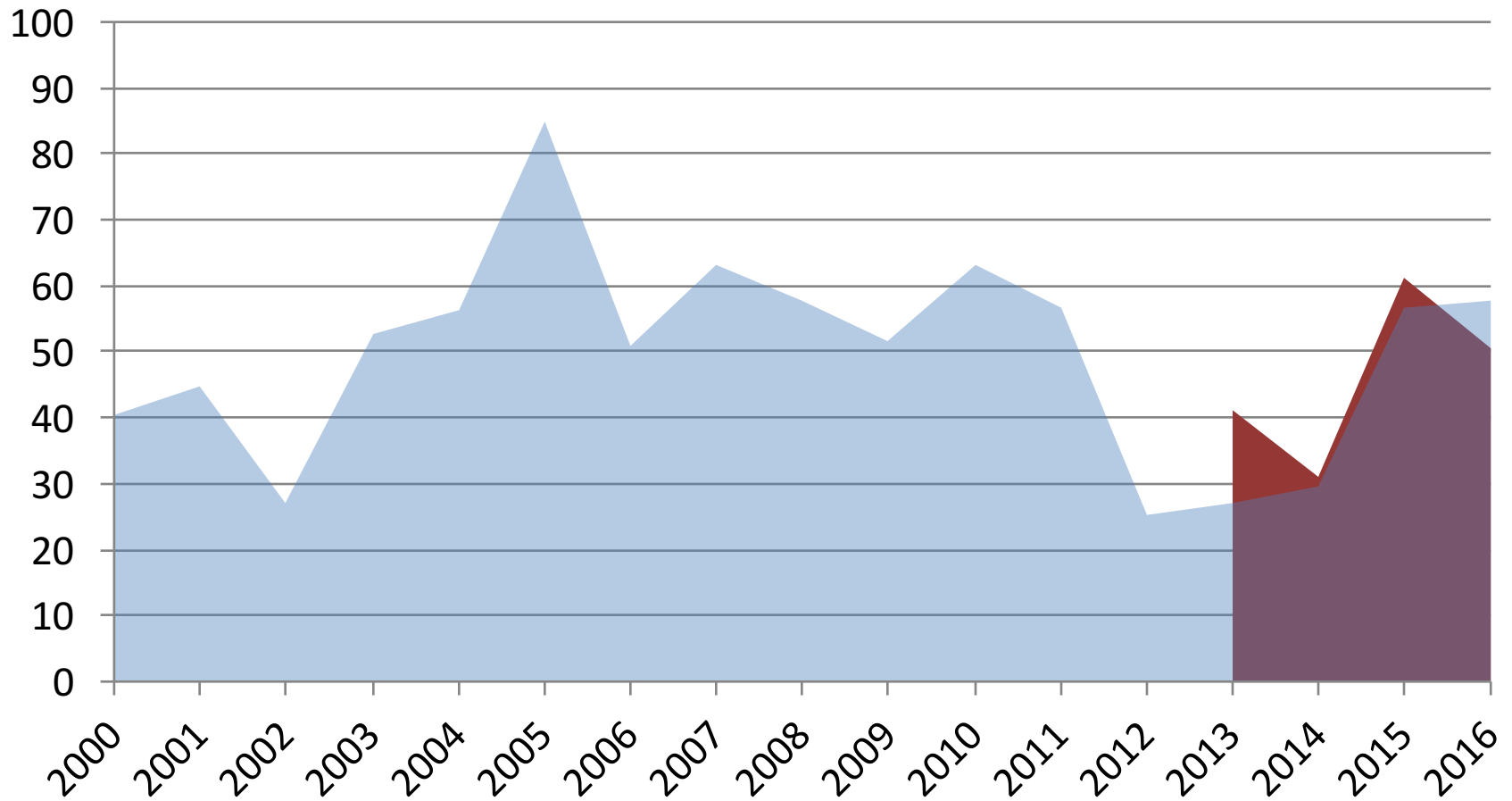




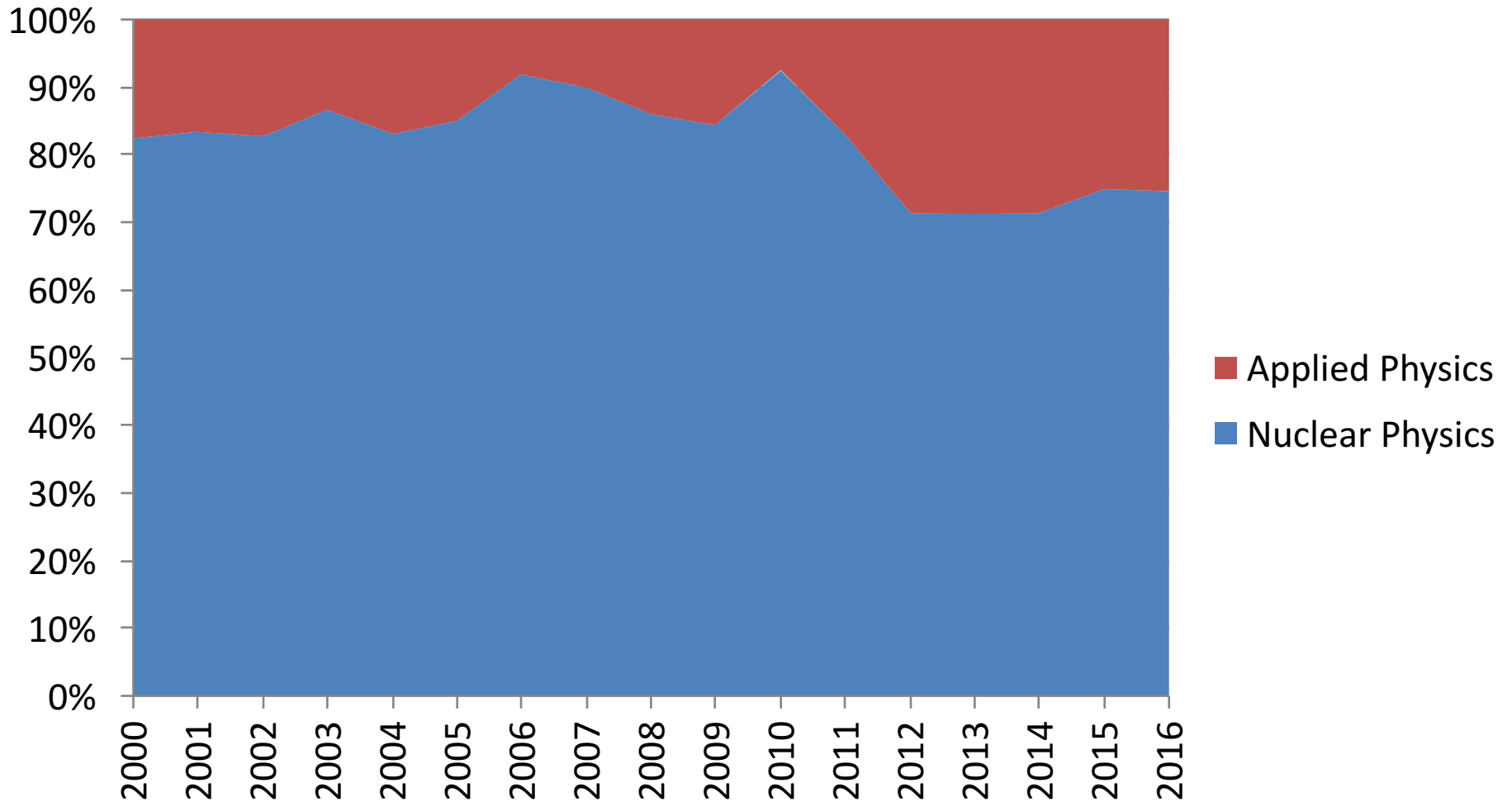
# Rejection Factor: Applied Physics



# Rejection Factor: Nuclear Physics

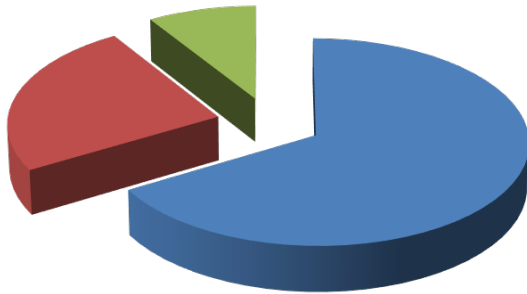


# Historical Beam-Time Sharing



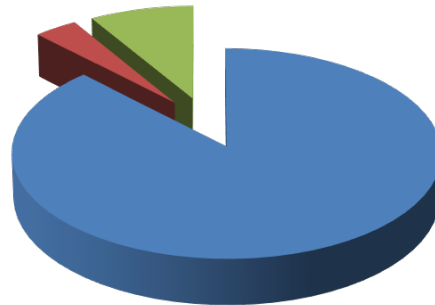
# Accelerator Usage

2013



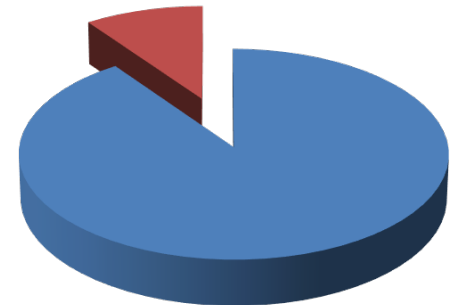
- Tandem
- Tandem-ALPI
- PIAVE-ALPI

2014



- Tandem
- Tandem-ALPI
- PIAVE-ALPI

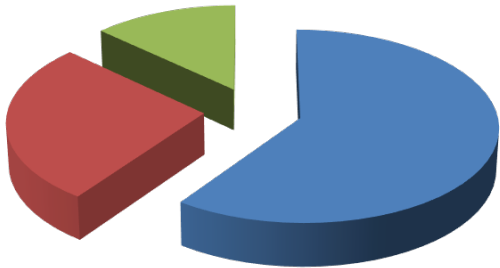
2015



- Tandem
- Tandem-ALPI
- PIAVE-ALPI

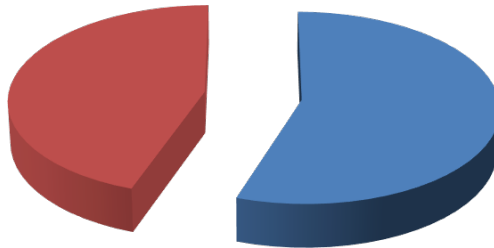
# Experimental Hall Usage

2013



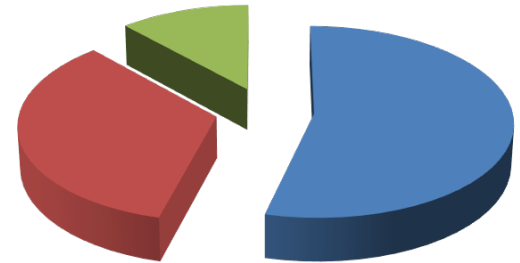
■ Hall I ■ Hall II ■ Hall III

2014



■ Hall I ■ Hall II ■ Hall III

2015



■ Hall I ■ Hall II ■ Hall III

# Beam Time Availability

- Total Amount of Days Available

- a. - days of Backlog (if any)
- b. - days for Radioprotection Tests (3 days/year)
- c. - days for Acc. Division Tests (4-5 days/semester)
- d. - days for Tutorial Exp. UNIPD (2-3 days/year)

- Days Available for new Experiments

- a. “Director’s Days” (10%)
- b. Nuclear Physics (PAC)
- c. Applied and Interdisciplinary Physics (USIP)

# “Director’s Days”

“**Director’s days**” are generally used for  
“**containing**” the backlog:

- unscheduled maintenance;
- tandem conditioning;
- (pulsed) beam preparation;
- accelerator division tests;
- additional advices from PAC and USIP;
- spare days (running experiment)
- ...

# Main Sources of Backlog

- **Laddertron Replacement** (foreseen for Sep. 2013) and anticipated to July 2013.
- **Dangerous discharge** during the TANDEM conditioning (September 28<sup>o</sup>, 2013).
- **Source replacement** (Nov. 2013).
- TERNA interruption (May 2014).
- **PIAVE recomissioning** (June 2014).
- Commissioning of the **beam-line to Exp. Hall III** (Fall 2014).
- **Source replacements** (Nov. 2014, Dec. 2014 and Jan 2015).
- **Laddertron Replacement** (foreseen for May 2015) **and Broken Link** (March 2015) and anticipated to March-April 2015.
- Instabilities to the **Source power supply** (Oct. 2015).
- **Laddertron Instabilities and Broken Link** (March-April 2016).
- Delays in the **PIAVE maintenance** (Spring 2016).
- **Laddertron Replacement** and major maintenance (Sep. 2016).



# Beam-Time Schedule Constraints

1. Needs of the **Source** (Ca, Mg, high intensity beams, PIAVE beams, difficult beam);
2. Needs of the **Accelerators** (beam preparation days for ALPI beams and pulsed beams in weekdays, avoiding rapid variations in the machine voltage);
3. **Access** to the experimental halls, especially right before the experiments;
4. Needs of the **Services** (to avoid experiments starting in the weekends, to combine experiments with the same beam).

# Beam-Time Schedule (I)

NOVEMBER 2016	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
ACCELERATOR DIVISION	A.					E.									H.																		
EXPERIMENTAL HALL I		B.					F.																			L. EXOTIC Exp. 16.19 Torresi/Wheldon/Parascandolo							
EXPERIMENTAL HALL II			C.	D.				G. GALILEO Exp. 16.01 Testov							I. PISOLO Exp. 16.28 Stefanini																		
EXPERIMENTAL HALL III																																	

Exp. N°	Accelerator	Spokesperson(s)	Beam-Line	Beam			
A.		Tandem Conditioning					
B.	USIP 16.03	Tandem	Manti	+60 Radiobiology	16O	128 MeV	2 pA
C.	UNIPD	Tandem	Montagnoli/Stefanini	-20 PISOLO	28,30Si	40-60 MeV	5-10 pA
D.	UNIPD	Tandem	Montagnoli/Stefanini	-20 PISOLO	36S	65-95 MeV	5-10 pA
E.		Tandem Conditioning					
F.	USIP 16.38	Tandem	Gerardin/Bigatin/Paccagnella	+70 SIRAD	multi-ion-source		10 enA
G.	16.01	Tandem	Testov	-30 GALILEO	58Ni	250 MeV	5 pA
H.			Spare				
I.	16.28	Tandem	Stefanini	-20 PISOLO	36S	65-95 MeV	3-10 pA
L.	16.19	Tandem	Torresi/Wheldon/Parascandolo	+10 EXOTIC	11B	55 MeV	100 pA

Remark: All experiments start at 9:00 AM of the first day indicated in the beam-time schedule.

 = Beam Preparation


13 Sept. 2016

# Beam-Time Schedule (II)

DECEMBER 2016	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ACCELERATOR DIVISION				C.																											
EXPERIMENTAL HALL I	A.	B. SIRAD																				G. SIRAD									
EXPERIMENTAL HALL II				D. GALILEO Exp. 16.02 Gadea / Valiente-Dobon						E. GALILEO Exp. 16.30 Smith / Mengoni						F.															
EXPERIMENTAL HALL III																															

	Exp. N°	Accelerator	Spokesperson(s)	Beam-Line	Beam			
A.	16.19	Tandem	Torresi/Wheldon/Parascandolo	+10	EXOTIC	11B	55 MeV	100 pA
B.	USIP 16.43	Tandem	Del Monte/Soffittia/Ballazzini/...	+70	SIRAD	m.i.s.	100-300 MeV	1-10 enA
C.			Tandem Conditioning					
D.	16.02	Tandem	Gadea/Valiente-Dobon	-30	GALILEO	64Zn	265 MeV	6 pA
E.	16.30	Tandem	Smith/Mengoni	-30	GALILEO	160	90 MeV	10 pA
F.	16.20 TT	Tandem	Gadea/Valiente/Modamio	-30	GALILEO	to be defined		
G.	USIP 16.04	Tandem	Cristalli/Angiolini	+70	SIRAD	58Ni	110 MeV	700 enA

Remark: All experiments start at 9:00 AM of the first day indicated in the beam-time schedule.

 = Beam Preparation

13 Sept. 2016

# Feedback from the Users

- Achieved Results (with respects to the plans)
- Duty-Cycle of the Experiment
- Main Problems
- Aspects to be improved
- Overall Evaluation