Statistics on the ATLAS collaboration based on authorship database as of 8 May 2008

Study done from two different view points

1. Gender perspective
2. National perspective

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Method and disclaimer

- Statistics based on the **ATLAS authorship database** as of May 8th, 2008 and **CERN database**
- All names were removed to **maintain privacy**
- For **elected/appointed positions**, information was gathered from various websites or from the minutes of the Collaboration Board meetings
- The **spreadsheets** will soon be made public to allow people to **check/correct** their content
- All **mistakes** are mine

ATLAS Collaboration

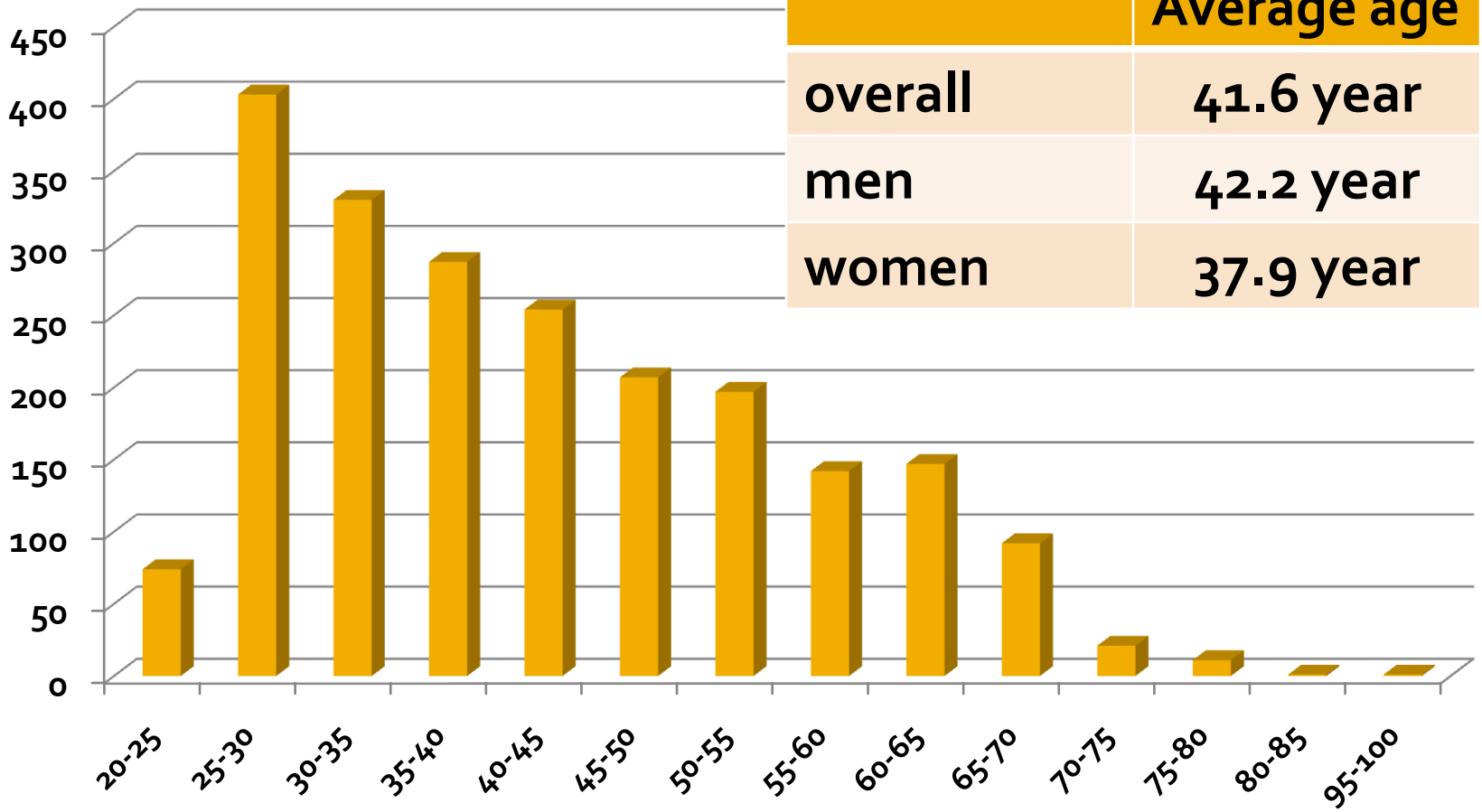
(Status May 2008)

37 Countries
167 Institutions
2235 Scientific authors:

- **349 women**
- **15.6% women**

Albany, Alberta, NIKHEF Amsterdam, Ankara, LAPP Annecy, Argonne NL, Arizona, UT Arlington, Athens, NTU Athens, Baku, IFAE Barcelona, Belgrade, Bergen, Berkeley LBL and UC, HU Berlin, Bern, Birmingham, UAN Bogota, Bologna, Bonn, Boston, Brandeis, Bratislava/SAS Kosice, Brookhaven NL, Buenos Aires, Bucharest, Cambridge, Carleton, Casablanca/Rabat, CERN, Chinese Cluster, Chicago, Chile, Clermont-Ferrand, Columbia, NBI Copenhagen, Cosenza, AGH UST Cracow, IFJ PAN Cracow, DESY, Dortmund, TU Dresden, JINR Dubna, Duke, Frascati, Freiburg, Geneva, Genoa, Giessen, Glasgow, Göttingen, LPSC Grenoble, Technion Haifa, Hampton, Harvard, Heidelberg, Hiroshima, Hiroshima IT, Indiana, Innsbruck, Iowa SU, Irvine UC, Istanbul Bogazici, KEK, Kobe, Kyoto, Kyoto UE, Lancaster, UN La Plata, Lecce, Lisbon LIP, Liverpool, Ljubljana, QMW London, RHBNC London, UC London, Lund, UA Madrid, Mainz, Manchester, Mannheim, CPPM Marseille, Massachusetts, MIT, Melbourne, Michigan, Michigan SU, Milano, Minsk NAS, Minsk NCPHEP, Montreal, McGill Montreal, FIAN Moscow, ITEP Moscow, MEPhI Moscow, MSU Moscow, Munich LMU, MPI Munich, Nagasaki IAS, Nagoya, Naples, New Mexico, New York, Nijmegen, BINP Novosibirsk, Ohio SU, Okayama, Oklahoma, Oklahoma SU, Oregon, LAL Orsay, Osaka, Oslo, Oxford, Paris VI and VII, Pavia, Pennsylvania, Pisa, Pittsburgh, CAS Prague, CU Prague, TU Prague, IHEP Protvino, Regina, Ritsumeikan, UFRJ Rio de Janeiro, Rome I, Rome II, Rome III, Rutherford Appleton Laboratory, DAPNIA Saclay, Santa Cruz UC, Sheffield, Shinshu, Siegen, Simon Fraser Burnaby, SLAC, Southern Methodist Dallas, NPI Petersburg, Stockholm, KTH Stockholm, Stony Brook, Sydney, AS Taipei, Tbilisi, Tel Aviv, Thessaloniki, Tokyo ICEPP, Tokyo MU, Toronto, TRIUMF, Tsukuba, Tufts, Udine/ICTP, Uppsala, Urbana UI, Valencia, UBC Vancouver, Victoria, Washington, Weizmann Rehovot, FH Wiener Neustadt, Wisconsin, Wuppertal, Yale, Yerevan

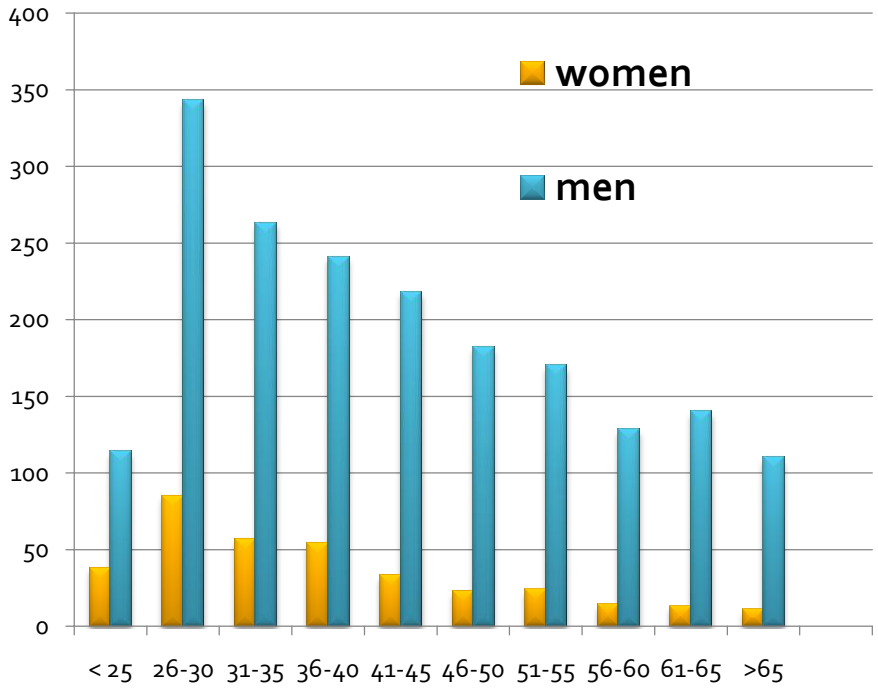
Age distribution for ATLAS authors



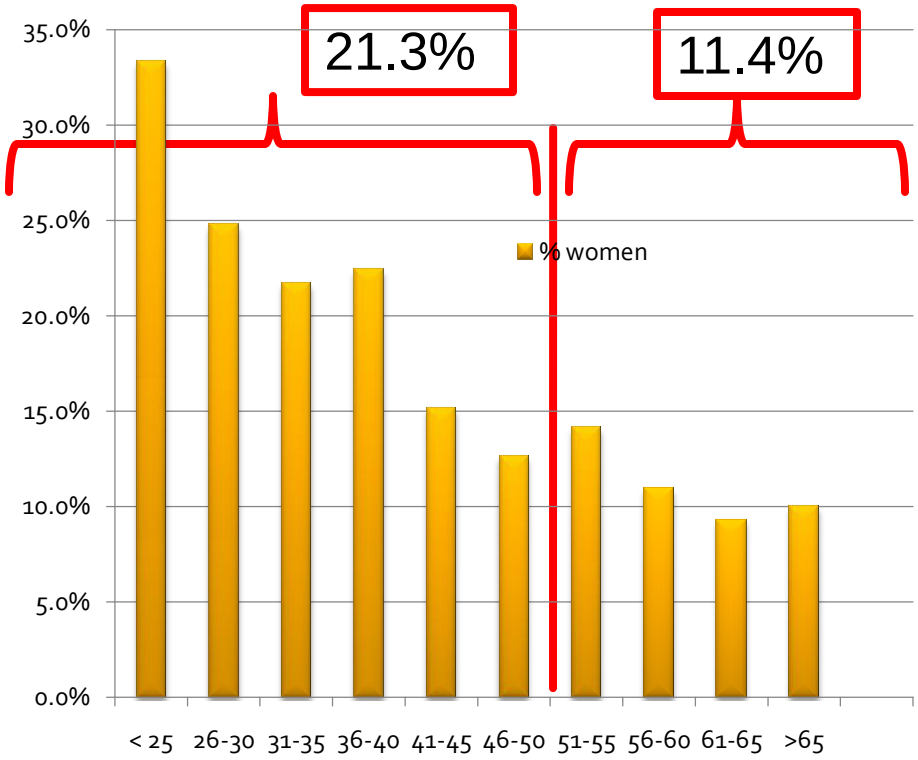
	Average age
overall	41.6 year
men	42.2 year
women	37.9 year

Age distribution on ATLAS - Women account for 15.6% of all people

Gender per age group



% of women per age group



50 year

% of women per country of institute and nationality (only countries with large statistical samples)

Country	women	men	total	% women at institute	% women nationality
Grand Total	341	1825	2166	15.6%	15.6%
Italy	47	151	198	23.7%	24.1%
France	27	113	140	19.3%	18.0%
UK	35	170	205	17.1%	15.3%
Germany	37	222	259	14.3%	11.2%
Canada	12	74	86	14.0%	17.9%
USA	56	385	441	12.7%	10.2%
CERN	15	105	120	12.5%	-
Czech Republic	5	58	63	7.9%	8.5%
Switzerland	2	25	27	7.4%	4.3%
Japan	4	78	82	4.9%	5.7%
Russia	5	105	110	4.5%	6.7%

country educating more women physicists than hiring

country hiring more than educating women in physics

PhD in Physics to women in the world: ATLAS collaboration follows same trend

Best on ATLAS	PhD's	Nationality in ATLAS	Worse on ATLAS	PhD's	Nationality in ATLAS
Country	%	%	Country	%	%
France	27	18	China-Taipei	13	8
Poland	23	35	United States	13	10
Norway	23	15	Sweden	13	12
Ukraine	23	-	Canada	12	18
Australia	22	20	Mexico	10	---
Turkey	21	40	Germany	9	11
India	20	-	Switzerland	9	4
Denmark	17	14	The Netherlands	9	7
Lithuania	17	-	South Korea	8	-
United Kingdom	16	15	Japan	8	6

Data from 1996-2001 Source: Statistical Research Center, International Study of Women in Physics.

Women on ATLAS per nationality above ATLAS average

Nationality	# women	# men	total	% women	% error
Romanian	11	16	27	40.7%	9.5%
Turkish	8	12	20	40.0%	11.0%
Polish	12	22	34	35.3%	8.2%
Greek	17	34	51	33.3%	6.6%
Spanish	23	59	82	28.0%	5.0%
Italian	66	217	283	23.3%	2.5%
Israeli	7	26	33	21.2%	7.1%
French	28	132	160	17.5%	3.0%
Canadian	12	59	71	16.9%	4.4%
ATLAS average	**349**	**1886**	**2235**	**15.7%**	0.8%

Women on ATLAS per nationality at or below ATLAS average

Nationality	# women	# men	total	% women	% error
British	28	153	181	15.5%	2.7%
Norwegian	3	17	20	15.0%	8.0%
Swedish	4	30	34	11.8%	5.5%
German	31	247	278	11.2%	1.9%
American	26	223	249	10.4%	1.9%
Czech	6	67	73	8.2%	3.2%
Chinese	4	49	53	7.5%	3.6%
Dutch	3	41	44	6.8%	3.8%
Portuguese	2	29	31	6.5%	4.4%
Russian	9	132	141	6.4%	2.1%
Japanese	5	86	91	5.5%	2.4%
Austrian	1	20	21	4.8%	4.6%
Swiss	1	22	23	4.3%	4.3%

% of women per country of institute: ATLAS average is 15.6%

Country	women	men	% women	error on %	Country	women	men	% women	error on %
Georgia	3	0	100.0%	0.0%	Nederland	6	36	14.3%	5.4%
Colombia	1	1	50.0%	35.4%	Germany	37	222	14.3%	2.2%
Romania	9	9	50.0%	11.8%	Canada	12	74	14.0%	3.7%
Serbia	3	5	37.5%	17.1%	USA	56	385	12.7%	1.6%
Poland	7	14	33.3%	10.3%	CERN	15	105	12.5%	3.0%
Spain	23	50	31.5%	5.4%	Austria	1	9	10.0%	9.5%
Turkey	4	9	30.8%	12.8%	Portugal	2	21	8.7%	5.9%
Argentina	2	5	28.6%	17.1%	Czech Republic	5	58	7.9%	3.4%
Greece	9	24	27.3%	7.8%	Taiwan	1	12	7.7%	7.4%
Denmark	3	9	25.0%	12.5%	Switzerland	2	25	7.4%	5.0%
Italy	47	151	23.7%	3.0%	Japan	4	75	5.1%	2.5%
Brazil	2	7	22.2%	13.9%	Russia+JINR	5	105	4.5%	2.0%
Australia	3	11	21.4%	11.0%	Armenia	0	1	0.0%	0.0%
Sweden	7	27	20.6%	6.9%	Azerbaijan	0	3	0.0%	0.0%
Slovenia	2	8	20.0%	12.6%	Belarus	0	4	0.0%	0.0%
France	27	113	19.3%	3.3%	Chile	0	5	0.0%	0.0%
UK	35	170	17.1%	2.6%	China	0	14	0.0%	0.0%
Norway	3	16	15.8%	8.4%	Morrocco	0	3	0.0%	0.0%
Israel	5	27	15.6%	6.4%	Slovakia	0	12	0.0%	0.0%

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Is the large fraction of women in a country related to the salary level?

High % of women

- In Georgia, Romania, Greece, Turkey
  - **No male Georgian physicist works in Georgia**
  - **11 male and 1 female Georgians outside Georgia**
- Also high fractions of women in France, Italy and UK

Physicists salaries are low or modest in all these countries

Very low % of women

- In Japan, USA, CERN and Switzerland, salaries are high

Also very low % of women
in Russia or Czech Republic but salaries are not high there

I am not a statistician but one wonders….

ATLAS women in their institutes

		# people in institute	
# women per institute	# institutes	Average # people	Range of people
0	58	6.4	1-41
1	28	9.0	2-46
2	27	11.4	4-29
3	21	11.8	3-33
4	12	15.2	9-36
> 4	21	22.7	10-120
total 341	167	11.0	1-120

- On average, each institute has 9 men and 2.0 women
- Half the institutes still have only one or no women

Women are generally fairly isolated

Women at big national laboratories

ATLAS Institutes	Country	women	men	% women
Argonne	USA	1	18	5.3%
Brookhaven	USA	0	41	0.0%
SLAC	USA	1	16	5.9%
DESY	Germany	8	20	28.6%
JINR	Russia	1	45	2.2%
RAL	UK	2	21	9.5%
Saclay	France	7	20	25.9%
CERN	CERN	15	105	12.5%
Frascati	Italy	5	13	27.8%

In general, big national laboratories are not setting an example for their countries, except for DESY, Saclay and Frascati which are above the national average

Most significant countries (< 3% error)

Nationality	# women	# men	total	% women	% error
Italian	66	217	283	23.3%	2.5%
French	28	132	160	17.5%	3.0%
British	28	153	181	15.5%	2.7%
German	31	247	278	11.2%	1.9%
American	26	223	249	10.4%	1.9%
Russian	9	132	141	6.4%	2.1%
Japanese	5	86	91	5.5%	2.4%
ATLAS average	**350**	**1887**	**2237**	**15.6%**	0.8%

ATLAS organization

“Executive tasks”

ATLAS management:
spokesperson
2 deputy spokesperson
resource coordinator
technical coordinator.

Collaboration Board:
chair
deputy chair

Project leaders:
SCT, Pixels,TRT
Inner Detector
Lar,TileCal
Muons
TDAQ

Executive Board

“Physics tasks”

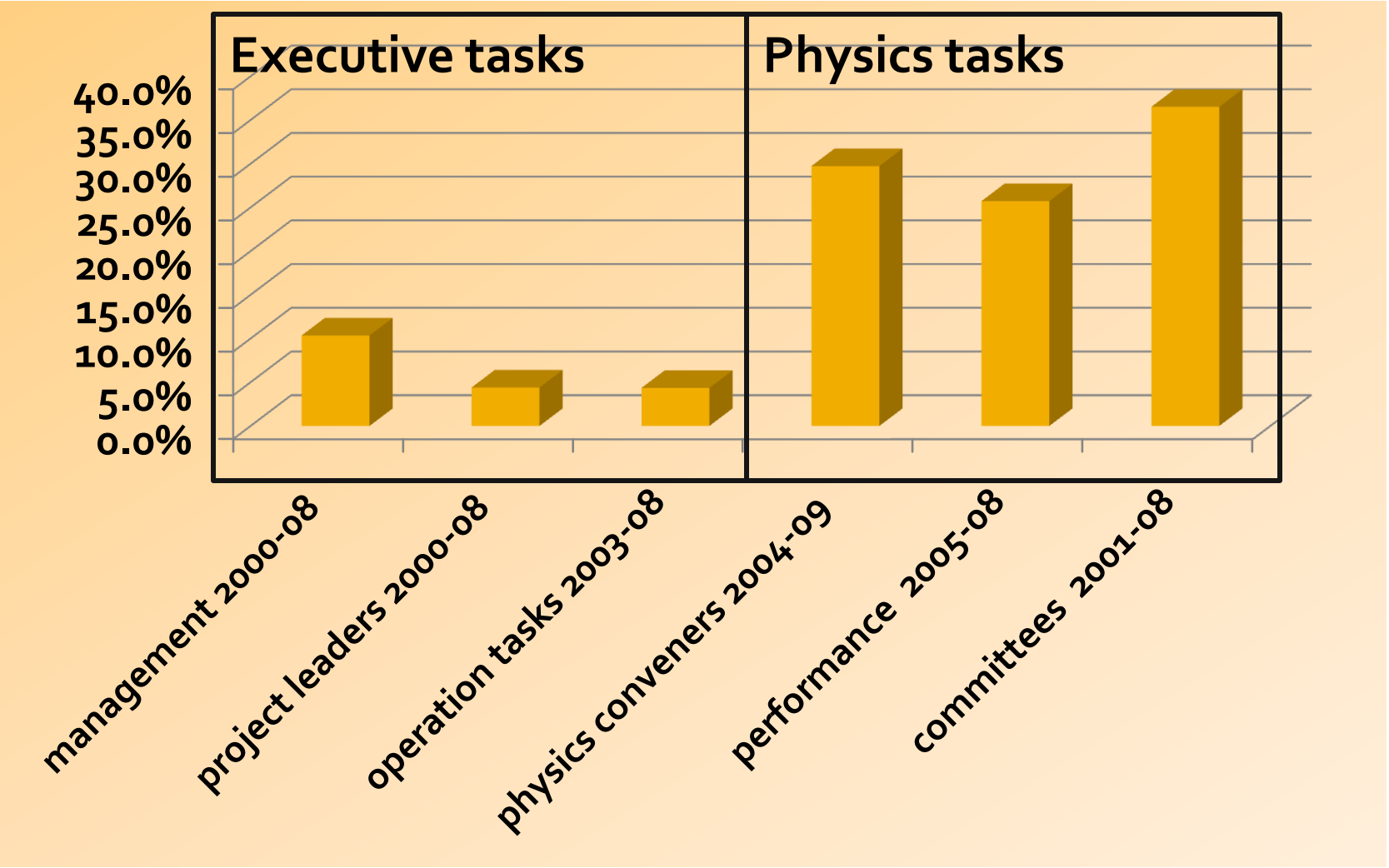
Committees:
publication committee,
authorship committee
speakers committee

Operation tasks:
run coordinator
trigger coordinator
computing coordinator
data preparation coordinator
physics coordinator

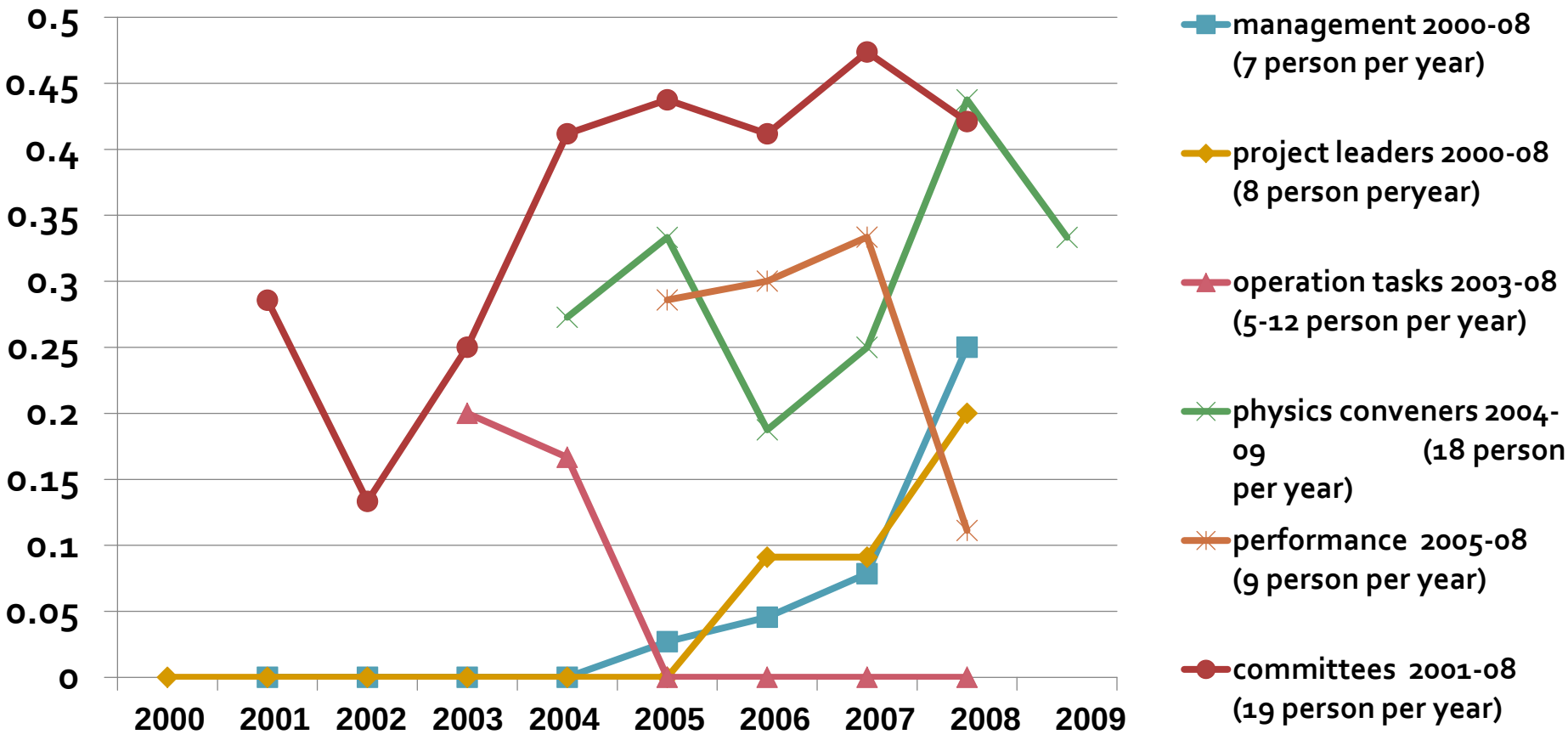
Performance groups:
e/gamma
Muon
B-tagging
Jets/Etmiss
tau

Physics groups:
Standard Model
Higgs
SUSY
Exotics
Top
b physics

Responsibilities by gender in ATLAS (2000-08)
% of women per cumulative person year



Responsibilities by gender in ATLAS (2000-09) evolution of % of women per year



What can be drawn on gender balance?

On the bright side:

- The fraction of women is increasing in ATLAS: many young women in the pipeline
- 26-37% of physics conveners and committee members are women, and this trend is increasing
- These women are gaining visibility and experience, and will be prime candidates for higher positions

On the not so bright side

- We still have a "leaky pipe":
- Women only account for 5% of the executive board cumulative but 14% today
- Many women are still isolated in their home institutes
- Most national labs have less women than universities

National balance

ATLAS authors distribution per home institute (37 countries+CERN)

51 %

Home institute country	% of ATLAS	Home institute country	% of ATLAS
USA	20.4%	Nederland	1.9%
Germany	12.0%	Sweden	1.6%
UK	9.5%	Greece	1.5%
Italy	9.1%	Israel	1.5%
France	6.5%	Switzerland	1.2%
CERN	5.5%	Portugal	1.1%
Russia	5.1%	Poland	1.0%
Canada	4.0%	Norway	0.9%
Japan	3.8%	Romania	0.8%
Spain	3.4%	Australia	0.7%
Czech Republic	2.9%	Others (17)	6.5%

Distribution per nationality of ATLAS authors (70 nationalities)

44.6%

Nationality	%	Nationality	%
German	12.7%	Dutch	2.0%
Italian	12.3%	Polish	1.6%
American	11.4%	Swedish	1.6%
British	8.2%	Israeli	1.5%
French	6.9%	Romanian	1.2%
Russian	6.2%	Portuguese	1.2%
Japanese	4.0%	Swiss	1.1%
Spanish	3.6%	Austrian	1.0%
Czech	3.3%	Norwegian	0.9%
Canadian	3.1%	Turkish	0.9%
Chinese	2.4%	Indian	0.8%
Greek	2.3%	Others (47)	10.0%

Distribution of ATLAS authors per home institute and nationality

Country	Institute	Nationality	Country	Institute	Nationality
German	12.0%	12.7%	Greek	1.5%	2.3%
Italian	9.1%	12.3%	Dutch	1.9%	2.0%
American	20.4%	11.4%	Polish	1.0%	1.6%
British	9.5%	8.2%	Swedish	1.6%	1.6%
French	6.5%	6.9%	Israeli	1.5%	1.5%
Russian	5.1%	6.2%	Romanian	0.8%	1.2%
Japanese	3.8%	4.0%	Portuguese	1.1%	1.2%
Spanish	3.4%	3.6%	Swiss	1.3%	1.1%
Czech	2.9%	3.3%	Austrian	0.5%	1.0%
Canadian	4.0%	3.1%	Norwegian	0.9%	0.9%
Chinese	0.5%	2.4%	Turkish	0.6%	0.9%

Note: 5% ATLAS people employed by CERN → increase for Europeans

Number of institutes per country

Country	no of inst.	% of institutes	% of people	Country	no of inst.	% of institutes	% of people
Argentina	2	1.2%	0.3%	Italy	13	7.8%	9.1%
Armenia	1	0.6%	0.0%	Japan	14	8.4%	3.8%
Australia	2	1.2%	0.6%	Morrocco	1	0.6%	0.1%
Austria	2	1.2%	0.5%	Nederland	2	1.2%	1.9%
Azerbaijan	1	0.6%	0.1%	Norway	2	1.2%	0.9%
Belarus	2	1.2%	0.2%	Poland	2	1.2%	1.0%
Brazil	1	0.6%	0.4%	Portugal	1	0.6%	1.1%
Canada	10	6.0%	4.0%	Romania	1	0.6%	0.8%
CERN	1	0.6%	5.5%	Russia	8	4.8%	5.1%
Chile	1	0.6%	0.2%	Serbia & M.	1	0.6%	0.4%
China	1	0.6%	0.5%	Slovak Republic	1	0.6%	0.6%
Colombia	1	0.6%	0.1%	Slovenia	1	0.6%	0.5%
Czech Rep.	3	1.8%	2.9%	Spain	3	1.8%	3.4%
Denmark	1	0.6%	0.6%	Sweden	4	2.4%	1.6%
France	7	4.2%	6.5%	Switzerland	2	1.2%	1.2%
Georgia	1	0.6%	0.1%	Taipei	1	0.6%	0.6%
Germany	15	9.0%	12.0%	Turkey	2	1.2%	0.6%
Greece	3	1.8%	1.5%	UK	12	7.2%	9.5%
Israel	3	1.8%	1.5%	USA	38	22.8%	20.4%

Appointments to "physics tasks" for 2000-2008 per country of institute

	committees	Physics (2009)	performance	total	fraction
France	10	20	12	42	14.1%
USA	13	19	10	42	14.1%
UK	19	20	0	39	13.1%
Italy	15	10	9	34	11.4%
Germany	14	8	3	25	8.4%
Japan	12	5	0	17	5.7%
CERN	9	3	4	16	5.4%
Nederland	3	8	2	13	4.4%
Poland	5	4	2	11	3.7%
Spain	7	4	0	11	3.7%
Canada	7	3	0	10	3.4%
Israel	9	0	0	9	3.0%
Sweden	7	2	0	9	3.0%
Greece	4	2	0	6	2.0%
Norway	5	0	0	5	1.7%
Russia	3	0	0	3	1.0%
Switzerland	3	0	0	3	1.0%
Slovenia	0	2	0	2	0.7%
Czech Republic	0	0	0	0	0.0%

Appointments to "executive tasks" for 2000-2008 per country of institute

	CB chair 2000-2008	project leaders 2003-2008	operation 2003-2008	management 2000-2008	total	fraction
CERN		26	9	31	66	40.2%
USA	3	10	6		19	11.6%
France		6	10		16	9.8%
Italy		5	8		13	7.9%
Germany	4	5	2		11	6.7%
UK	4	2	3		9	5.5%
Sweden	2		1	5	8	4.9%
Norway		2		4	6	3.7%
Israel		5			5	3.0%
Canada	4				4	2.4%
Nederland			3		3	1.8%
Czech Rep.		2			2	1.2%
Spain	1				1	0.6%
Switzerland			1		1	0.6%

"Physics" and "Executive" tasks per country versus fraction in ATLAS

	"physics" fraction 2000-2008	"executive" fraction	fraction in ATLAS	"physics" - fraction in ATLAS	"executive" - fraction in ATLAS
Canada	3.4%	2.4%	4.0%	-0.6%	-1.6%
CERN	5.4%	40.2%	5.5%	-0.1%	34.7%
Czech Republic	0.0%	1.2%	2.9%	-2.9%	-1.7%
France	14.1%	9.8%	6.5%	7.6%	3.3%
Germany	8.4%	6.7%	12.0%	-3.6%	-5.3%
Greece	2.0%		1.5%	0.5%	-1.5%
Israel	3.0%	3.0%	1.5%	1.5%	1.5%
Italy	11.4%	7.9%	9.1%	2.3%	-1.2%
Japan	5.7%		3.8%	1.9%	-3.8%
Nederland	4.4%	1.8%	1.9%	2.5%	-0.1%
Norway	1.7%	3.7%	0.9%	0.8%	2.8%
Poland	3.7%		1.0%	2.7%	-1.0%
Russia	1.0%		5.1%	-4.1%	-5.1%
Slovenia	0.7%		0.5%	0.2%	-0.5%
Spain	3.7%	0.6%	3.4%	0.3%	-2.8%
Sweden	3.0%	4.9%	1.6%	1.4%	3.3%
Switzerland	1.0%	0.6%	1.3%	-0.3%	-0.7%
UK	13.1%	5.5%	9.5%	3.6%	-4.0%
USA	14.1%	11.6%	20.4%	-6.3%	-8.8%
Portugal			1.1%	-1.1%	-1.1%
Romania			0.8%	-0.8%	-0.8%
Australia			0.6%	-0.6%	-0.6%
Taipei			0.6%	-0.6%	-0.6%
Turkey			0.6%	-0.6%	-0.6%
Denmark			0.6%	-0.6%	-0.6%

…but this is just a first look

- Small mistakes still need to be corrected
- Many different factors have also contributed such as, for example:
  - Time since an institute joined ATLAS
  - Ratio of junior/senior people in a group
  - Geographical location: people nearer CERN can more easily accept a position at CERN
  - Availability and interest of the individuals proposed at each level

What can be inferred from this?

On the bright side

- Very diversified group of people involved in physics work: committees and conveners
- Some outstanding individuals can tip the national ratio
- Appointments to physics tasks often lead to executive tasks
- Assuming responsibilities leads to growth

On the not so bright side

- CERN staff is taking the lion's share of executive tasks

Some countries have been favored, other disfavored but many factors may have contributed and these are not yet taken into account

- Some countries have had nobody in physics or executive tasks since 2000…