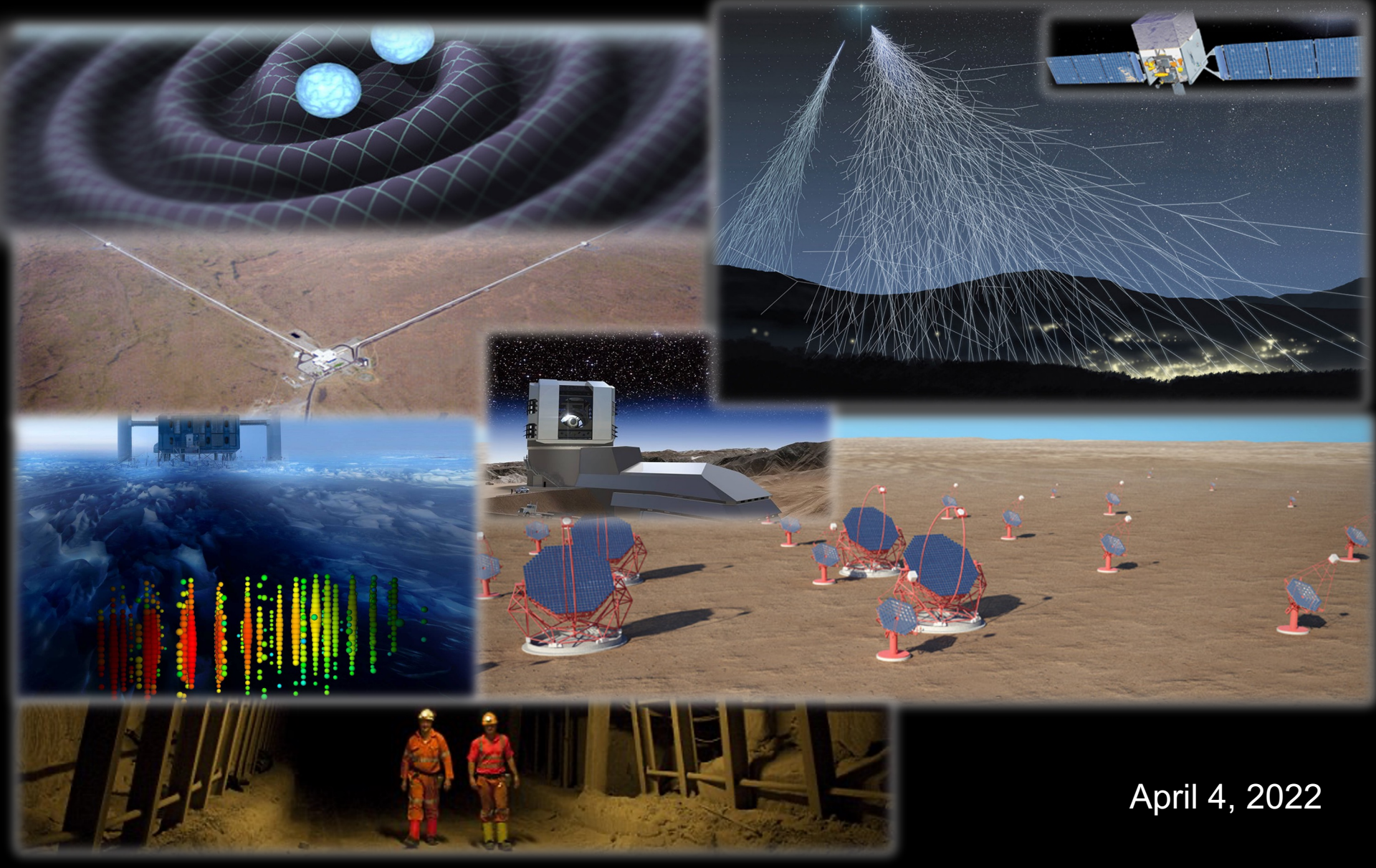


IoP APP Virtual Annual General Meeting



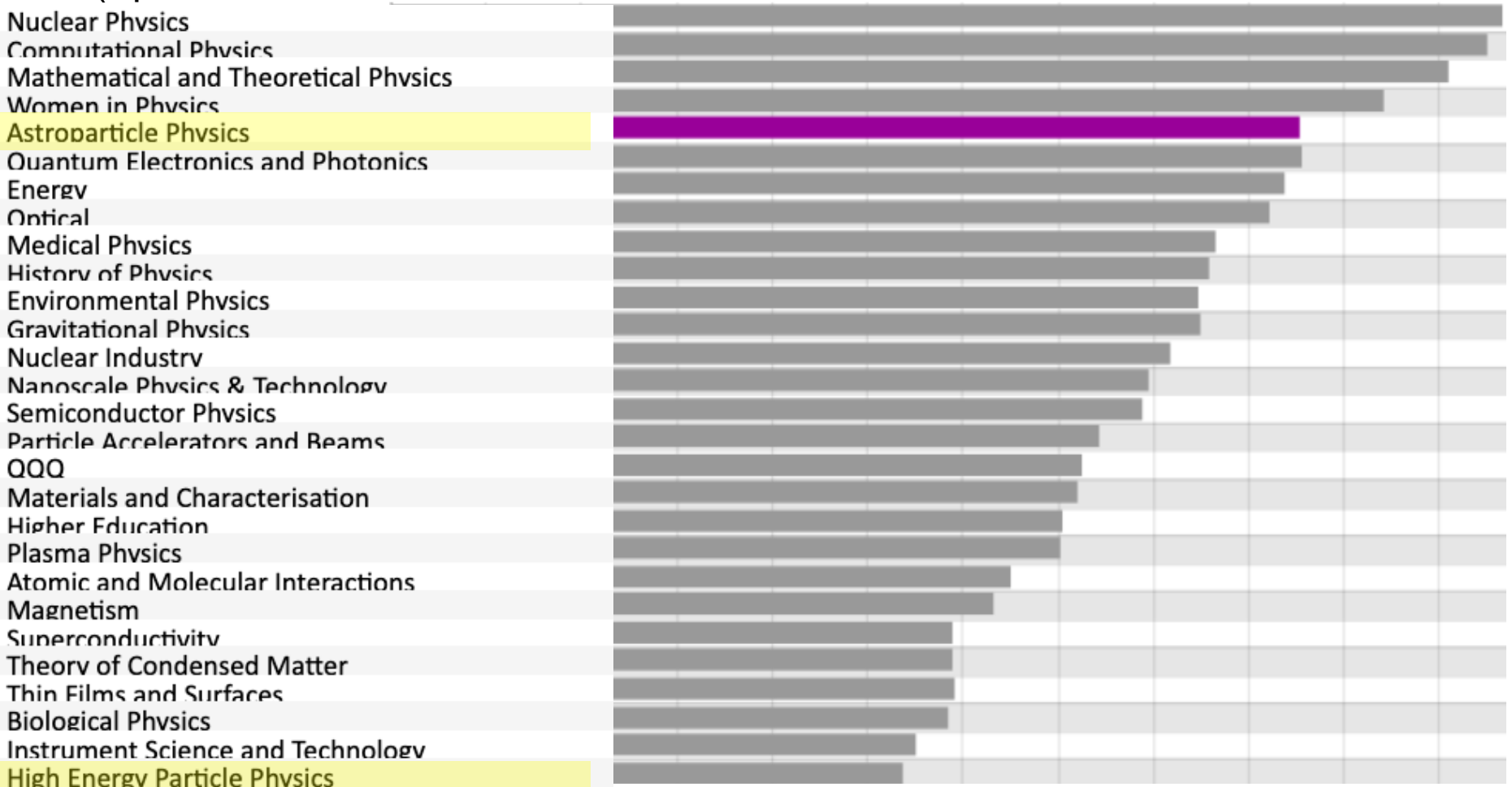
April 4, 2022

IoP Astroparticle Physics by the numbers

One of the largest working groups in the IoP

- 1,907 members (5th largest group, 9% of all IoP members)

(Apr. 2021: 1,790 members, 7th largest group, 8% of all IoP members)



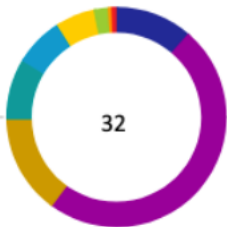
IoP Astroparticle Physics by the numbers

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- 1,907 members (5th largest group, 9% of all IoP members)
- 8th young average age group (61% is <30. IoP average is 18% is <30)

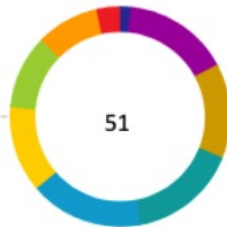
IoP APP

Average Age

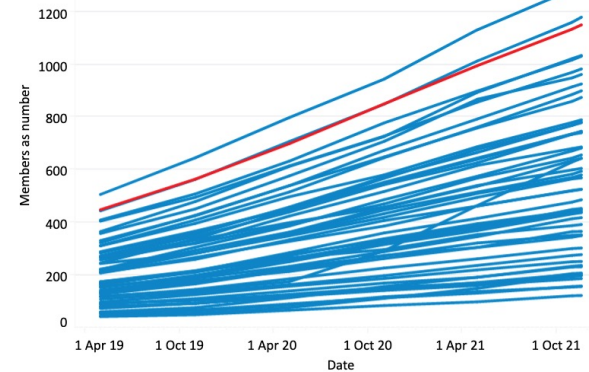


IoP all

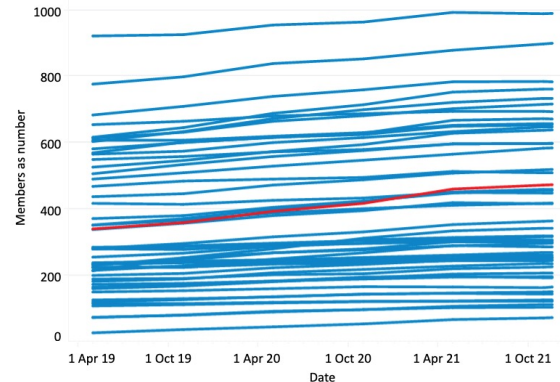
Average Age



Trend of IoP APP (<30)



Trend of IoP APP (>30)



15-19	220	12%	■
20-29	930	49%	■
30-39	280	15%	■
40-49	170	9%	■
50-59	140	7%	■
60-69	110	6%	■
70-79	40	2%	■
80+	10	1%	■
Unknown	10	1%	■

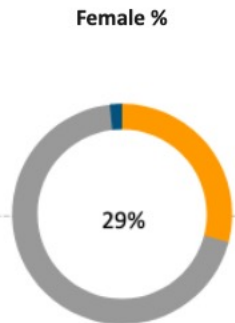
15-19	380	2%	■
20-29	3370	16%	■
30-39	3000	14%	■
40-49	3450	16%	■
50-59	3580	17%	■
60-69	2730	13%	■
70-79	2350	11%	■
80+	2000	9%	■
Unknown	700	3%	■

IoP Astroparticle Physics by the numbers

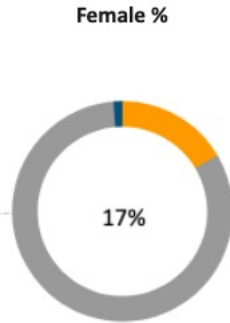
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- 3rd largest for female members (F=29%, IoP average is F=17%)

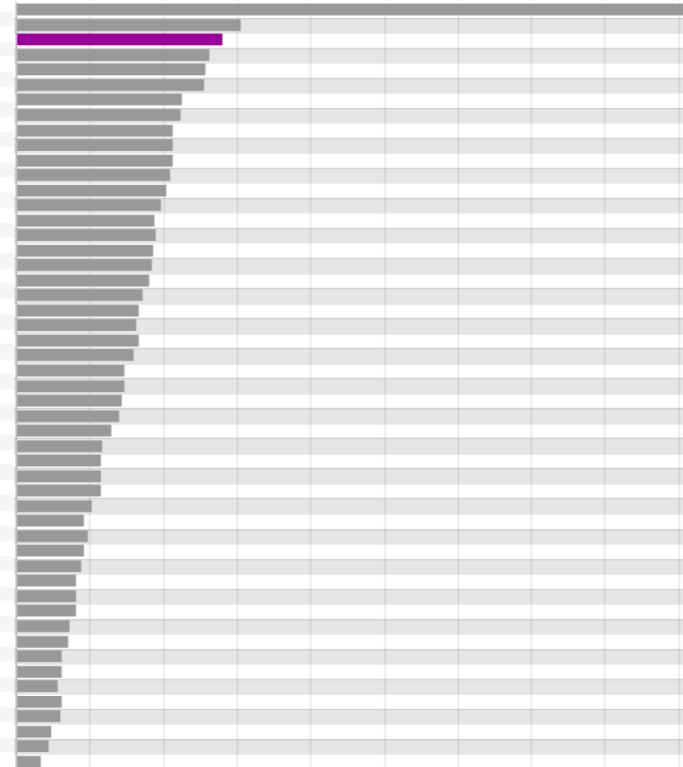
IoP APP









IoP all



- Women in Physics
- Nuclear Physics
- Astroparticle Physics
- Medical Physics
- Environmental Physics
- Mathematical and Theoretical Physics
- History of Physics
- Particle Accelerators and Beams
- Energy
- Gravitational Physics
- Higher Education
- Computational Physics
- Quantum Electronics and Photonics
- Biological Physics
- Nanoscale Physics & Technology
- Nuclear Industry
- Physics Communicators
- QQQ
- Atomic and Molecular Interactions
- Plasma Physics
- Early Career Members
- Materials and Characterisation
- Optical
- Molecular Physics
- Semiconductor Physics
- Superconductivity
- Theory of Condensed Matter
- Magnetism
- Neutron Scattering
- Structural Condensed Matter
- Applied Mechanics
- High Energy Particle Physics
- Thin Films and Surfaces
- Vacuum
- Low Temperature
- Nonlinear and Complex Physics
- Liquids and Complex Fluids
- Shock Waves and Extreme Conditions
- Physical Acoustics
- Instrument Science and Technology
- Polymer Physics
- Electron Microscopy and Analysis
- Business Innovation and Growth
- Carbon
- Combustion Physics
- RRSG: Magnetic Resonance
- Dielectrics and Electrostatics
- Food Physics Group
- Printing and Graphics Science
- Ion and Plasma Surface Interactions
- Tribology



Female	560	29%	
Male	1320	69%	
Other / Unknown	30	2%	

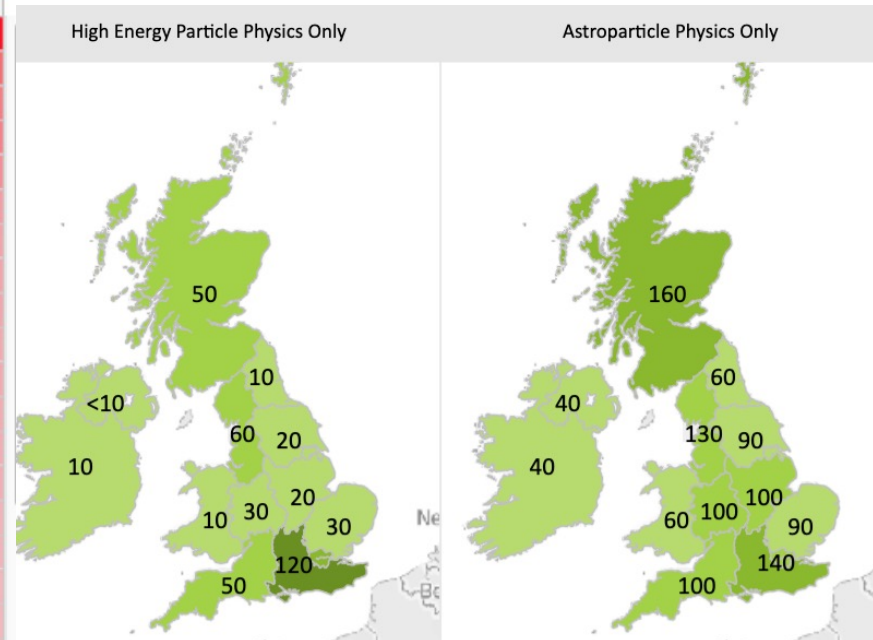
Female	3610	17%	
Male	17720	82%	
Other / Unknown	230	1%	

IoP Astroparticle Physics by the numbers

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- 27% of APP is HEPP member, 47% of HEPP is APP member

Rank of Groups by Crossover Membership	List of Groups	M	F	All	
1	Astroparticle Physics	1320	560	1910	100%
2	Gravitational Physics	810	340	1160	61%
3	Nuclear Physics	690	320	1030	54%
4	Mathematical and Theoretical Physics	670	310	1000	52%
5	Particle Accelerators and Beams	560	300	870	46%
6	Computational Physics	530	200	740	39%
7	Quantum Electronics and Photonics	480	200	690	36%
8	Atomic and Molecular Interactions	440	230	680	36%
9	QQQ	440	210	660	35%
10	Plasma Physics	420	220	650	34%
11	History of Physics	400	220	640	34%
12	Energy	440	180	620	32%
13	Environmental Physics	370	220	600	31%
	Women in Physics	90	490	600	31%
15	Nuclear Industry	400	150	550	29%
	Superconductivity	370	170	550	29%
17	Higher Education	340	180	520	27%
18	High Energy Particle Physics	370	130	510	27%



IoP APP social media

Website

<https://www.iop.org/physics-community/special-interest-groups/astroparticle-physics-group>

Facebook (2059 likes, 2022/04/02), <https://www.facebook.com/IOPAPP/>

Twitter (125 followers, 2021/04/02), https://twitter.com/IOP_APP

IoP APP social media is quite successful to reach out to broad audience (but we don't use much)

Published	Post	Type	Targeting	Reach	Engagement	Promote
03/22/2022 5:23 PM	 IoP APP workshop, "Supernova Neutrinos in the Multimessenger"			767 	16 13 	Boost post
02/24/2022 12:50 AM	 168000yrs ago 🏠 ---?--> 🌠 1987/02/23 --> 2022/02/23			223 	4 7 	Boost post
02/22/2022 9:33 AM	 Happy palindromic ambigram Twosday 22022022 and even better			256 	2 4 	Boost post
02/21/2022 10:15 AM	 Interested in space exploration and art? Come along to this event and			79 	2 5 	Boost event
01/07/2022 12:11 PM	 Hear Nobel Laureate Art McDonald discuss what is dark matter and			265 	6 8 	Boost post
12/10/2021 7:12 PM	 The Astroparticle Physics group is hosting a zoom-based virtual open			531 	11 6 	Boost post
12/02/2021 11:55 AM	 Check out UK's deep underground facility live in just over 2 hours!			128 	0 2 	Boost event
11/30/2021 7:01 PM	 Congratulations Dr. Xin Ran Liu to win the Mary Somerville Medal! Dr.			331 	13 8 	Boost post

IoP APP group committee members



Matt Roth (Australia Nat'l U)
- Engineer/astronomy
- Global member



Cheryl Patrick (Edinburgh)
- Newsletter committee chair
- Neutrinoless double beta decay



Teppei Katori (King's College)
- Chair
- Neutrino astronomy



Anthony Brown (Durham)
- Secretary
- Astroparticle physics theory



XinRan Liu (Edinburgh)
- Treasurer
- Outreach committee chair
- Direct dark matter search



Christopher McCabe (King's College)
- DMUK contact
- Astroparticle physics theory



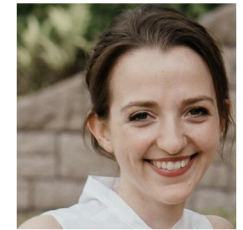
Emma Meehan (Boulby lab)
- Engineering representative
- Underground lab



Ian Harry (Portsmouth)
- Gravitational wave



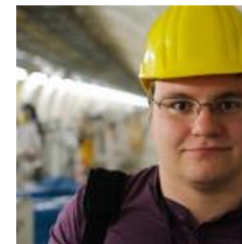
Garret Cotter (Oxford)
- Gamma-ray astronomy



Theresa Fruth (UCL)
- Prize selection committee chair
- Direct dark matter search



Rogan Clark (King's College)
- Student representative
- Neutrino astronomy



Sam Spencer (Oxford)
- Student representative
- Gamma-ray astronomy

Anh Nguyen (Edinburgh)
- Student representative
- Direct dark matter search

Not covered area
- Nuclear astronomy

-

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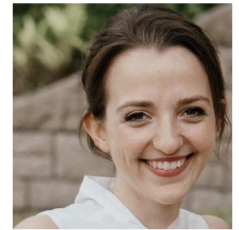
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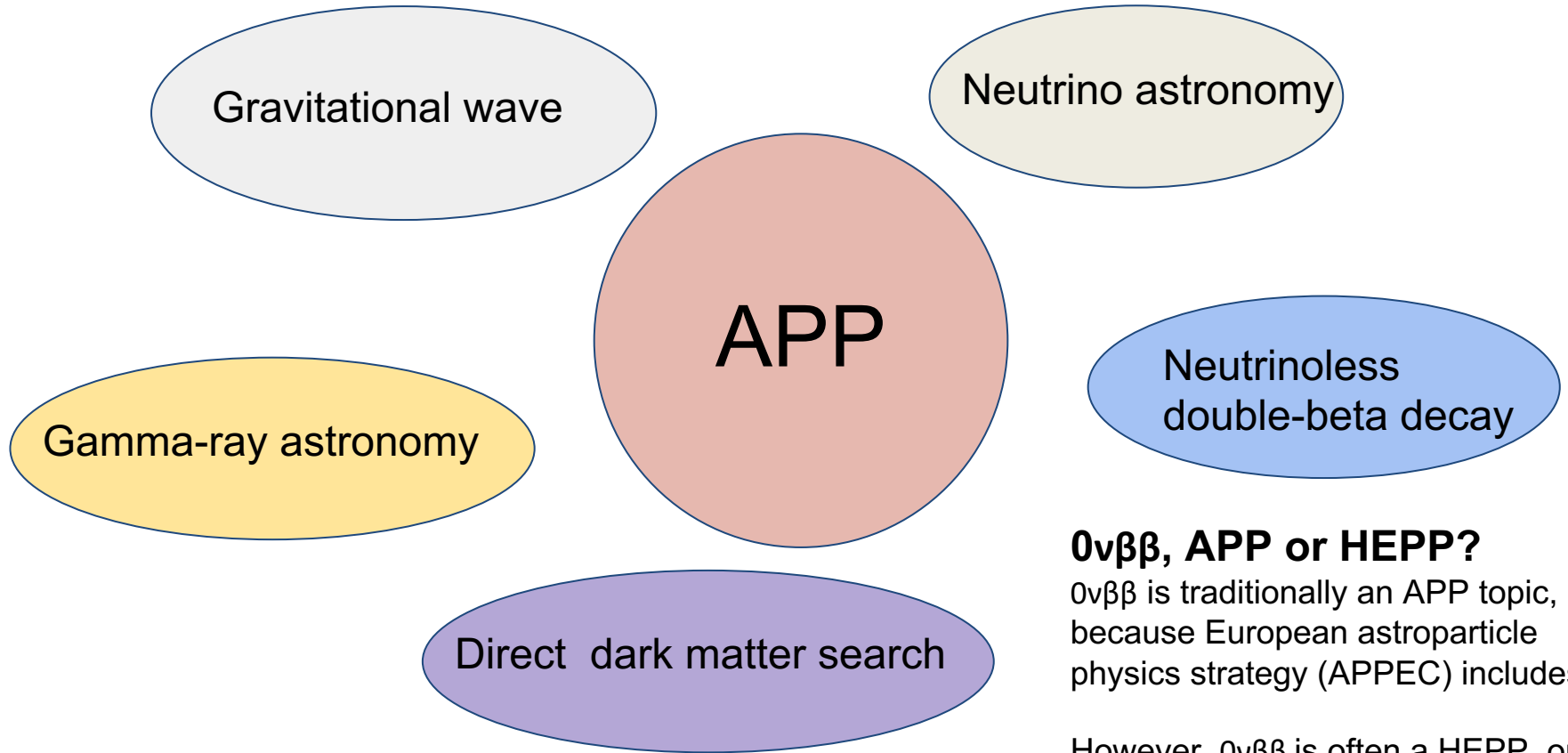
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Anh Nguyen (Edinburgh)
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- Direct dark matter search

Not covered area

- Nuclear astrophysics
- else?

IoP APP topics



$0\nu\beta\beta$, APP or HEPP?

$0\nu\beta\beta$ is traditionally an APP topic, because European astroparticle physics strategy (APPEC) includes it

However, $0\nu\beta\beta$ is often a HEPP, or sometimes NP, topic

Topics are not limited to these five

- Nuclear astrophysics
- Ultra-high-energy cosmic rays
- Radio, optical, x-ray astronomy
- etc

2021 Newsletter

<https://www.iop.org/physics-community/special-interest-groups/astroparticle-physics-group>

2021 Newsletter



Cheryl Patrick (Edinburgh)
- Newsletter committee chair

<https://www.iop.org/physics-community/special-interest-groups/astroparticle-physics-group>

The newsletter will be published every year. Please contact Cheryl Patrick (cpatrick@ed.ac.uk) if you have a topic to be included in the next Newsletter, to be published in early 2022

Astroparticle Physics Group Newsletter

December 2021

Astroparticle Physics Group Newsletter

December 2021

IOP Institute of Physics Astroparticle Physics Group

NEWSLETTER

2021

Issue no. 11



Image credits: E. Meehan (STFC Boulby Laboratory), S. Spencer (HESS telescope), X. R. Liu (Remote³ project)

Follow us!

- Facebook: @IOPAPP, www.facebook.com/IOPAPP
- Twitter: @IOP_APP, https://twitter.com/IOP_APP
- Website: <https://www.iop.org/physics-community/special-interest-groups/astroparticle-physics-group>

Content

Annual IOP meeting announcement
Editorial and Words from the Chair
Meet your Committee
IOP APP Prizes

Coming up:

- IOP APP Early Career Prize 2021
- IOP APP Thesis Prize 2022

Winners:

- IOP APP Thesis Prize 2020
- IOP APP Poster Prize 2021

Physics Highlights of 2021

- Gravitational waves

Experimental Spotlights

- The MIGDAL experiment
- LEGEND

Outreach

- The Remote³ project

Events

- PSD12
- Dark Matter Day
- Dark Matter UK
- OWAN21
- Neutrino Day
- YTF 21

Funding Opportunities

2021 APP ECR Prize



Theresa Fruth (UCL)
- Prize selection committee chair
- Direct dark matter search

IOP APP ECR Prize 2021

<https://www.iop.org/physics-community/special-interest-groups/astroparticle-physics-group/app-early-career-prize>



2021 APP ECR Prize

Dr. Gavin Lamb (University of Leicester)

For contributions on multi-messenger astronomy including electromagnetic radiation and gravitational waves



Astroparticle
Physics group

IOP
Institute of Physics

IOP Institute of Physics

HEPP & APP Annual Conference 2022

3-6 April 2022, Rutherford Appleton Laboratory STFC, Oxfordshire, UK



2022 APP Thesis prize



Theresa Fruth (UCL)
- Prize selection committee chair

IOP APP Thesis Prize 2022

<https://www.iop.org/physics-community/special-interest-groups/astroparticle-physics-group/app-thesis-prize>

The call will be end around early 2023. Details will be circulated later of this year.

Nominees are early career researchers who:

- work in the area of astroparticle physics (both experiment and theory)
- work in any institution in the UK and Ireland
- Thesis has been submitted

Nomination process

- Two nominators are required. At least one of them should be the thesis supervisor or external examiner.
- Nominations must include electronic copy of the thesis.

Funding opportunities



XinRan Liu
(Edinburgh)
- Treasurer

IoP APP group funding for workshops & conferences

IoP APP financially support various workshops and conferences. Please write up one page proposal follow the instruction in the newsletter. If the event is organized by IoP APP group only, the guidance of subsidy is up to £500 (half-day event) or £1000 (one-day event), In the event that **more than one group** wishes to organise a joint meeting the recommended maximum subsidy will increase by 50%. For details, please contact IoP APP chair (Teppei Katori, teppei.katori@kcl.ac.uk).

IoP Research Student Conference Fund

IoP APP provides a financial support for IoP member PhD students to attend conferences with up to £300 is awarded for a single trip. Applications run on a quarterly basis. Please send your applications before; 1st March, 1st June, 1st September, 1st December. Applications must reach us three months in advance of the conference you plan to attend, for more information see:

https://www.iop.org/about/grants/travel-bursaries/research_student/page_38808.html

Please follow the link, download an application form, and return to supportandgrants@iop.org.

Treasury Report - Budget



XinRan Liu
(Edinburgh)
- Treasurer

For 2021 the Astroparticle Physics group carries on the same budget, £7200.

We spent

- £350 PSD
- £100 YTF21
- £500, DMUK workshop
- £373.25, Dark Matter Day event
- £665.36 OWAN21 workshop
- £300 Prizes

In total we spent £2,288.61

For 2022, £7,000 is allocated to the Astroparticle physics group activities.

- ❖ IOP APP/HEPP Conference - £750
- ❖ Student Conference - £750
- ❖ APP Workshop x 2 - £1,500
- ❖ DMUK Conference - £750
- ❖ NuPhys Conference - £750
- ❖ Dark Matter Day Event - £300
- ❖ External Workshop - £750
- ❖ APP Thesis Prize + Poster Prize = £350
- ❖ Group Budget - £1000

2023 APP-HEPP joint annual meeting

2023 APP-HEPP joint annual meeting will be hosted by

King's College London (?)

- else?

Details to be announced later (meeting with HEPP)

APP group event list 2022

April 4-6: APP-HEPP Conference

April 7: Supernova neutrinos in Multi-messenger era (hybrid)

<https://indico.kcl.ac.uk/event/271/>

June: APP student conference (TBA)

May: Dark Matter UK conference

??? - Detector conference (noble gas scintillation?)

October - Dark Matter Day, worldwide

December - NuPhys 2022 conference, London

Budget allocation for additional 1-2 workshops (hopefully cross-group workshops), and a student conference. We are still affected by the pandemic and all plans are very flexible.

APP workshop, “Opportunities with Atmospheric Neutrinos (OWAN21)” (2021)
<https://www.iopconferences.org/iop/frontend/reg/thome.csp?pageID=1086295&eventID=1758>



IoP Limit less

APP is one of the youngest group, full of energy with extremely interesting science. Can we do anything with IoP limit less activity?

<https://www.iop.org/about/strategy/limit-less>

2.6% girls choose A-level physics (8.6% boys)

8.1% of students from the highest income group choose physics A-level, but 2.7% from the lowest income group

Ethnicity background dependence
Caribbean < European, African < Asian

“I was told I was not smart enough for physics and that if I didn’t want to be an engineer there was no point.”

“When you hear of someone who’s done A-level physics or as a degree you go ooh, you must be clever”

Father in focus group,
Wales

“I was told by a close female family member that physics was boring and a waste of time. I found out I was actually really good at it. Absolutely one of the most interesting and fascinating fields of study.”



APP Outreach activity

Neutrino Day 2021



XinRan Liu (Edinburgh)
- Outreach committee chair

Andrew (LZ - volunteer) David (LZ Volunteer) Anh (LZ Volunteer) Theresa - LZ Volunteer

Future of DUNE

SPECTROSCOPE

Ashley Armstrong - SURF Volunteer

David (LZ Volunteer) Anh (LZ Volunteer) Theresa - LZ Volunteer XinRan (LZ - Volunteer) Andrew (LZ - volunteer)

Life In the Background

Matt (SURF)

XinRan (LZ - Volunteer) Online

XinRan (LZ - Volu...)

Dark Matter Day 2021



XinRan Liu (Edinburgh)
- Outreach committee chair

- ❖ Joint UK-Canada outreach effort to encourage an understanding of the current dark matter status.
- ❖ Huge success, with 400+ live audience and 1K+ on various Social Media.



Dark Matter Day 2021



XinRan Liu (Edinburgh)
- Outreach committee chair

Tracy Slatyer
Professor at Massachusetts Institute of Technology

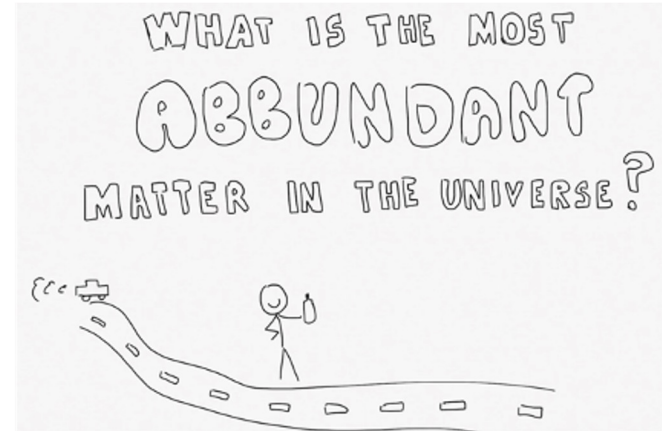
Catherine Heymans
Astronomer Royal for Scotland, Professor of Astrophysics at The University of Edinburgh

Nigel Smith
Director and CEO of TRIUMF

Alex Murphy
Professor of particle astrophysics at The University of Edinburgh

Ask me anything!

DARK MATTER DAY



<https://youtu.be/snqOhqDf36E>



<https://4fvirtual.org.uk/spaceexpo/darkmatterday/>

APP COP26/SDG

Anything to report/discuss?