

## March 2020

The Particles Zone was a themed zone funded by STFC. There were six scientists taking part in the zone:

- Ondrej Kovanda is an STFC funded PhD student studying ways the standard model of particle physics fails.
- Jordan McElwee is an STFC funded PhD student studying how neutrinos interact with the atomic nucleus.
- Eleanor Jones is PhD student at CERN, using the world's most powerful particle accelerator to look back in time and predict the future.
- Edward Banks, winner of the Particles Zone, is a Lab Technician at STFC Boulby Underground Laboratory, running experiments that need very quiet conditions.
- Christine Beavers is the Principal Beamline Scientist at the Diamond Light Source, using high energy x-rays to see the atomic structure of minerals, materials and molecules.
- Alice Morris is a PhD student at UCL, looking at data from the ATLAS detector at CERN.

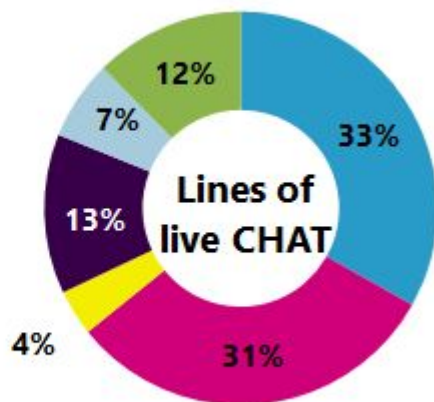
## Key figures from the Particles Zone

This zone had an above average number of questions asked, and a considerably higher number of answers given in comparison to other March 2020 zones.

Due to the effects of coronavirus, many schools reported a large number of staff and student absences, which had an impact on their participation in the second week. Students could still access the chat from home so we still opened bookings, but there were a lower number of chats than we would normally see, and they were quieter on average.

	PARTICLES ZONE	MAR '20 ZONES AVERAGE	2012-19 ZONES AVERAGE
Schools	9	7	10
Students logged in	333	300	385
% of students active in ASK, CHAT, VOTE, or comments	94%	86%	87%
Questions asked	270	251	637
Questions approved	215	154	284
Answers given	471	287	512
Comments	35	27	66
Votes	236	204	301
Live chats	15	14	16
Lines of live chat	6542	4869	5,722
Average lines per chat	436	358	357

## Scientist activity



### PLACE

- Edward Banks
- Jordan McElwee
- Ondrej Kovanda
- Eleanor Jones
- Alice Morris
- Christine Beavers

- 1st
- 2nd
- 3rd
- 4th
- 5th
- 6th

## School activity



		YEAR GROUP(S)	CLASSES
<b>A</b>	Bingley Grammar School, Bingley (U)	7	2
<b>B</b>	Highdown School, Reading	7	5
<b>C</b>	St Dominic's High School, Belfast (WP)	8	4
<b>D</b>	Bournemouth School, Bournemouth (U)	12	2
<b>E</b>	The West Bridgford School, Nottingham	STEM	1
<b>F</b>	Loreto College, St Albans (U)	11	2
<b>G</b>	Hayesfield Girls School, Bath	9	1
<b>H</b>	Wyvern Academy, Darlington (WP/U)	STEM	3
<b>I</b>	MidKent College, Gillingham (U)	12	2

We have found that schools that are more than 30 minutes travel time from their closest Higher Education Institution are less likely to receive visits and benefit from engagement activities. We give priority to underserved (U) and widening participation (WP) schools when allocating places. Find out more about our research at <https://about.imascientist.org.uk/2017/school-engagement-in-stem-enrichment-effect-of-school-location/>

## Popular topics

The questions in this zone were generally focussed on general science topics, with students asking about the galaxy, stars and planets, and how is the universe expanding.

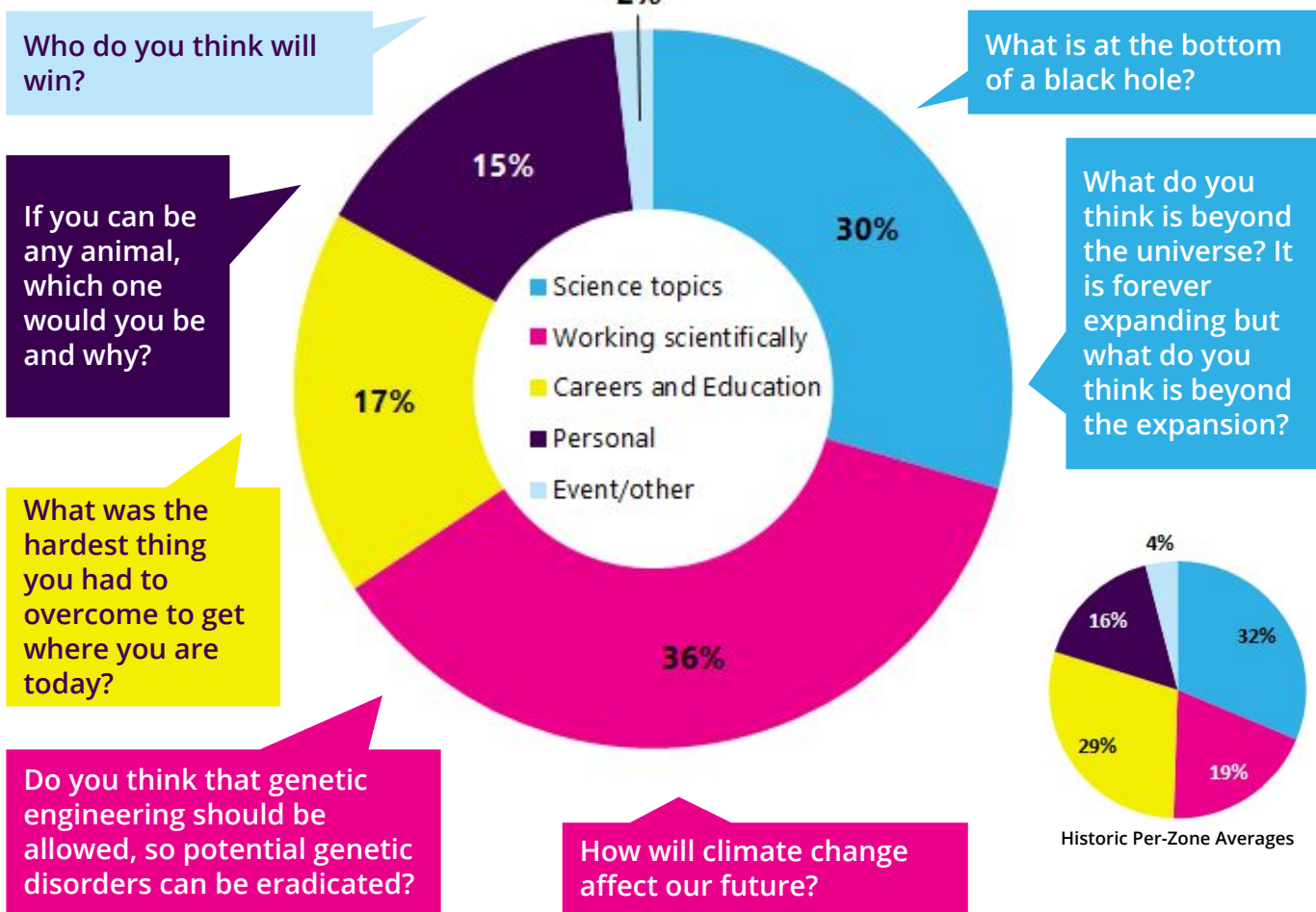
There were discussions of other scientific topics, including questions such “what do you think will happen in the future in terms of particles”, and “why can’t you cut atoms in half?”. There were also many questions about coronavirus, including the difference between COVID-19 and coronavirus, and whether there was a cure,

There were also many questions about the scientist’s personal lives in the zone, such as what they’ve had to overcome to get to where they are today.

### Frequent words used in live chats by students and scientists





### Question themes and example questions in the Zone





## Examples of good engagement

The students asked scientists about their inspiration behind their career decisions, and what particularly interested them about certain topics:

 **2 cake395bug:** @all did anything in particular lead to you wanting to study these areas  [Reply](#)



 **Eleanor:** @cake395bug: For me, I was always interested in science but the thing that pushed me to physics was when the Higgs boson got discovered in 2012! I thought that was really cool and I wanted to be a part of that world!  [Reply](#)

 **3 Jack:** @Eleanor: what is the hoggs boson  [Reply](#)



 **Eleanor:** @Jack: The Higgs boson is a particle which is responsible for giving mass to all other particles. It was predicted to exist back in the 1960s but we only discovered it 50 years later in 2012!  [Reply](#)

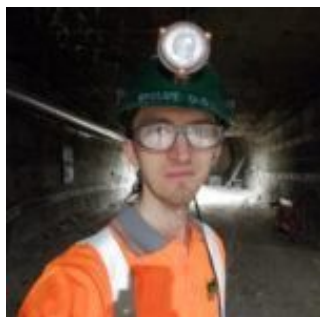
There were also questions about the scientists work, and the challenges they face. This allowed the scientists to show students that they don't know everything:

 **10 part395can:** @Alice What is the most puzzling question you have faced about the universe?  [Reply](#)

 **Alice:** @part395can: So I've been trying to find new types of particles which are created in high-energy collisions. If they don't decay right away (like most of the particles we produce do) then they look very different in our detector, and it's (hopefully) easier to spot them after a bit of hacking. It's possible that if we found particles like this they could answer why there is more matter than antimatter, or what dark matter is, but my aim has just been to see if we can find them at all! Sadly didn't find any though...  [Reply](#)

 **10 part395can:** @Alice: Do you use a particle accelerator?  [Reply](#)

 **Alice:** @part395can: Yes, or at least I use the data collected by my colleagues who run the accelerator  [Reply](#)



## Scientist winner: [Edward Banks](#)

Edward's plans for the prize money: *"I'd buy some raspberry pis (mini-computers) and the necessary cables and adaptors in order to set up some cosmic ray detectors in schools near to the mine; students could use these to explore particle physics concepts. "*

Read Edward's [thank you message](#)

## Student winner: [zest395air](#)

As the student winner, zest395air will receive a certificate and a gift voucher.

## Feedback

We're still collecting feedback from teachers, students and scientists but here are a few of the comments made about March's *I'm a Scientist*...

*All our students have thoroughly enjoyed the experience, learned a lot and had something positive to cling to this past week*  
— Teacher

*I would highly recommend I'm A Scientists to my colleagues, as I had an incredible experience. The ability for high school students to ask questions (including some real tough ones) directly is a fantastic outreach tool, and I feel privileged to have taken part.*  
— Scientist

*I think this is a pretty unique method of science engagement! You get the chance to get to know and help some of the students, particularly in the evening chats!*  
— Scientist

*Thank you for answering every question no matter what the challenge!*  
— Student

*This has been really useful. Thank you for taking time to answer us! :)*  
— Student

*Thank you for giving up the time and answering our questions you have informed us with alot of cool and amazing information*  
— Student