



Summer
25

chaosscience.org.uk

What is CHaOS?

Cambridge Hands-On Science, fondly known as CHaOS, is the student society at the University of Cambridge dedicated to Science, Technology, Engineering, Medicine, & Mathematics (STEMM) outreach. We are a group of volunteers who want science to be accessible and fun. Our aim is to transfer our enthusiasm to the general public through fun science experiments, bringing STEMM to as many different people as we can. We particularly like to use hands-on experiments to engage children, who may have only ever learnt science from a whiteboard.



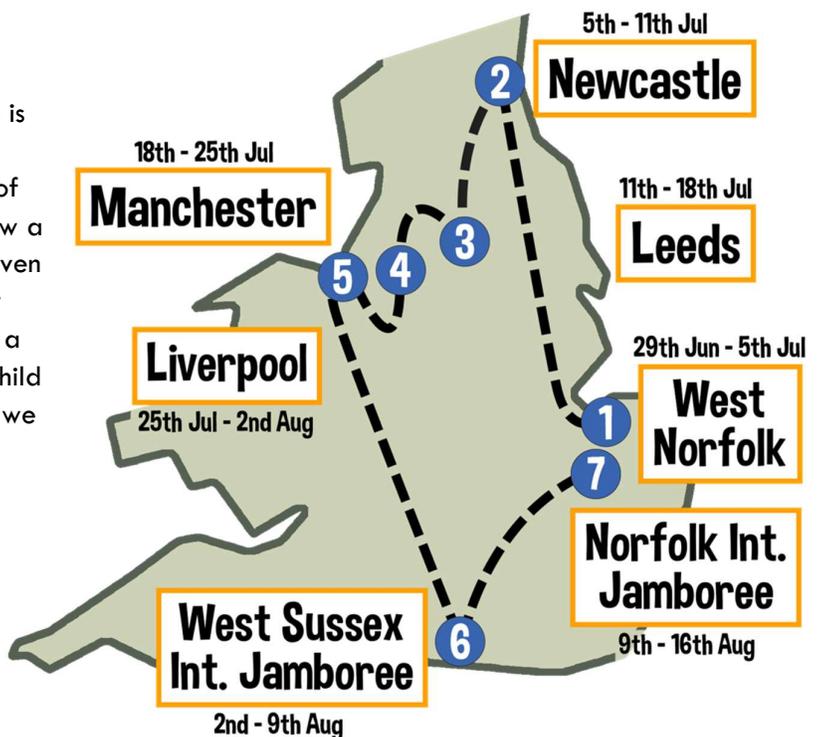
Our smiling volunteers in West Norfolk.



A view of just how full the van can become with experiments! Every year we endeavour to bring as much variety as we can. There are 70+ experiments in there!

The Roadshow

Every summer, CHaOS packs a van full of experiments and tours the country. CHaOS is made up of volunteers, and this year 84 students from the University gave up part of their summer in order to make the roadshow a great success! This year's roadshow was seven weeks, visiting schools to fill a classroom or gym with experiments, and giving children a fun hands-on experience. Typically, each child will get to see five or six experiments and we provide a spread of subjects to engage interest all over STEMM.



Why CHaOS Matters

CHaOS provides something unique and accessible. Volunteers, who are young and enthused about their subject, get to really engage children with science. For some children, this can be the first time they find science captivating, and we find teachers at schools often overjoyed in seeing a few specific children become entranced with an experiment, who may have never shown interest in STEMM before. CHaOS does many events outside the roadshow, including school visits, public events in the Cambridge area, as well *Crash, Bang, Squelch!*, a day we fill the Cambridge Zoology department with experiments and open it to the public.

2025 by the Numbers

Seven weeks, **seventeen** schools, **twelve** public events, **two** jamborees, **84** demonstrators, and just over **7000** attendees.

100% of surveyed attendees at our public events reported enjoying the event “a lot” or “quite a lot” (82% for “a lot”).

96% reported learning “a lot” or “quite a lot” (48% for “a lot”).

95% would come to another CHaOS event (with the rest responding “maybe”).

We aim to reach children with low science capital by visiting areas of socioeconomic disadvantage (as this is correlated with science capital). In the schools we visited, the average percentage of students eligible for free school meals was **47.4%** (compare to the national average of 24.6%).

At our public events, the science capital of attendees was surveyed by asking how often they visited science museums, tried experiments at home, and watched documentaries. Attendees had an average science capital score of **1.8 out of 5** (where 5 would be

participating in all these activities every week, and 0 would be never).

Budget Breakdown

Item	Description	Amount (£)
Travel	Train tickets, hire vehicles, mileage claims	8502
Campsite Bookings		4537
Food	Meals and snacks for volunteers	2616
Experiments	Building and maintenance	676
Miscellaneous	Laundry, postage, online ads	117
Total		17 448

Roadshow 2025

This year marked our 21st Summer Roadshow, and it was another successful summer of hands-on science! This year, we aimed to travel further north than we have in recent years, which allowed us to reach more underserved communities, however brought challenges of more expensive tickets and longer distances for our drivers. The roadshow was very well-received in all the areas we visited, and we're proud of the efforts of our committee and volunteers in putting it on. Read on to hear about what we got up to over the summer...

West Norfolk

Exams are over, the Sun is out, and we're excited to hit the road for the 21st roadshow in CHaOS history! Just a pitstop to our affectionately named storage "cupboard" first to load up on experiments and camping equipment. A short trip up the A10 and some ominous road signs later ("Think, don't sink!" was the advice), we reach our first destination.

If one event in a day wasn't enough, we kicked off with two on the first day! Hunstanton Primary School in the morning and Long Sutton Library in the afternoon.

Owing to rather effective busking with our skeleton and mascot, Boris, we managed to gather a tremendous footfall of children and parents in the library, joining us after school for some hands-on fun!

Lots of kids were interested in our Jaw and Teeth model at the library. Did you know that enamel is the hardest substance in the human body? Why does the inside of a tooth need to be kept moist? We were *filling* children with facts all afternoon.

We had a delightfully energetic time at Churchill Park Academy next, where we engaged pupils with special educational needs. There was target practice with vortex canons and smoke rings in one corner, and earthquakes were being made in another at "Resonance".

"The best outreach visit that we have ever had – students and staff loved it" – Teacher at Kings Lynn Academy

Experiment Spotlight - Mechanical Advantage

One of our most grand experiments and one of man's most important inventions, our giant pulley. The experiment explores forces, energy—and all-importantly for the gym-enthused contingent of year 8s and 9s—

weights. At King's Lynn academy, we had fun testing our own strength while learning much about mechanics!

Experiment Spotlight - Lung and Larynx model

It was always noisy near our volunteer Monica this week, where the kids were exploring the properties of sound and the mechanism of our voices. Handed bits of balloon and a pump, their challenge was to mimic the human lungs and vocal cords.



We were rewarded with marvellous weather Norfolk! On the hottest day of the year, our volunteers cooled down with some fierce games of "Mop-Hockey".

Newcastle

While last week may have been the conditions we dream of for CHaOS, our trip up North was one for the brave and certainly for the CHaOS history books. A week of stormy weather left us soaked, and our tents in significant peril. So we wholeheartedly thank our volunteers for their faith and resilience during such a challenging week.

Resilient and united by our passion for science and outreach, we headed up the magnificent towers Newcastle Castle on our first day in the city.

Our maths games “King’s game” and “Thinking caps” were popular challenges to crack this week.

At Central Walker CofE Primary School we tried a game involving the entire hall of 60 pupils—“Phase Game”. Pupils ‘bonded’ by holding hands and cycled through phases by changing kinetic energy (lots of running!).

At the next few schools, we had time to perform some large-scale science demonstrations in addition to our usual sessions. At Walbottle Academy, we made vortices strong enough to extinguish a candle from over 10 metres, and fascinating smoke rings to explain fluid dynamics. At Atkinson Road Primary, we showed off a simple vacuum cleaner transformed into a powerful bazooka.

Our audiences were keen with questions and predictions. We answered lots of questions on life as a scientist, chemical reactions, and the physiology of our skeleton Boris!

“Fantastic event for children. Really explains scientific experiments to them in an easy-to-understand way” – Parent at Newcastle Castle



Discussing evolution with our collection of real animal skulls

Experiment Spotlight - A Bug’s Life

Our Zoologist Isaac fascinated children with “A Bug’s Life”. An assortment of all kinds of

preserved arthropods with intriguing appearances and adaptations. Unanimously across the week, the favourite of all was the rhinoceros beetle.



A truncated icosahedron with mathematician Charlie



We mentioned the weather! The demise of our faithful marquee of the past seven years, owing to a storm.



Our Newcastle volunteers!

Leeds

This year's goal has been to visit more of the North, and with the generous support of our Northern based sponsors, we've been able to achieve exactly so. Thus, following Newcastle, a trip down the A1 took us to our next destination, Leeds!



In the heart of the city, we visited a bustling Leeds Central Library to begin.



The chemistry experiment "Red Cabbage" at Leeds Central Library.

Experiment Spotlight – Red Cabbage

Discovering acids and alkalis through using the deep-purple cabbage juice a pH indicator.

Energy was definitely plentiful on Sunday. We invited teams of scouts with which we were sharing a site to join us for some hands-on science fun, alongside all manner of other adventure activities they had lined up.

CHaOS works with Scouts quite regularly. It's a great way to reach a young audience outside of our usual school and venue visits.

Kindly, the Scouts left us some food as a thank you after the session. In fact, it was the surplus from a hundred of Scouts. An abundance! We were having bread for breakfast and bread for pudding.

During the week, we left a child wowed by the "Polarisation" experiment! Sufficiently so that they insisted on taking notes in order to explain to their parents later!

"Monty Hall's Perplexing Goat" (our take on the famous problem), had many takers. It's a challenging yet satisfying probability problem. For all but one child who not only already knew the solution, they had already simulated it in code! And another child who "broke" the game through an extremely unlikely streak of correct guesses, almost defying probability.

“This is the best science enrichment I’ve seen in fourteen years of teaching” – Teacher at Leeds City Academy



Signing out and the end of a school day!

Manchester

We arrive in Manchester right in time to experience the fever gripping the city. The return of Oasis of course! It’s the word on everyone’s lips, and on signs and t-shirts wherever we found ourselves. We take our van and minibus up the hills of Oldham to find our retreat for the fourth week of roadshow.



Resonance with Asmita at Manchester Central Library

Experiment Spotlight – Resonance

Turning a handle to create an earthquake! It turns out going as fast as you can doesn’t make the buildings topple—it’s about finding the correct the frequency. How can we engineer skyscrapers so that they won’t fall?

It’s mid-July now and most schools are closing (if not already closed!). We arrived at Parrenthorn High School for their ‘activities day’ on the penultimate day of school. Across two classrooms we had a plethora of experiments from “Cryptography” to the explosive “Electrolysis” experiment. Endearingly, the teachers were as curious as the pupils!

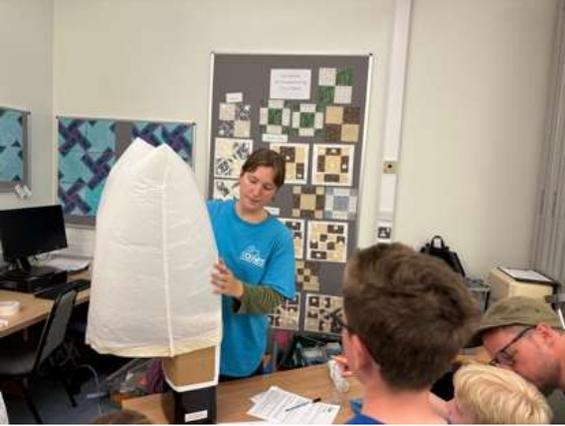
Again, we broke out our vortices experiment for a group demonstration at the end. Keen to see the smoke machine demonstration, the teachers were laissez-faire to the fire alarms going off.

Arriving at Peel Hall Primary School next for some hands-on science on their very last day of school before their end of year parties!

“It was lovely to see so many women involved in STEM activities!” – Parent at Ramsbottom Library



Acids and bases at “Mini Explosions” in Ramsbottom Library



"Hot Air Balloon" in Ramsbottom Library



"A Bug's Life" at Halton Lea Library



Celebration at the end of the week.

Liverpool

To Liverpool for the next stop on our Roadshow (and cultural journey). From Oasis to the Beatles! With schools closed, this was a week of library visits around the city, reaching children on their school holidays.

"Wow. Amazing way to show and teach children about science. Every team member at the event was friendly, approachable and wanting to spend time with the children right to the very end." – Parent at Ellesmere Port Library



Testing maths and logic with team games



Waves and Vibrations on a slinky in Little Sutton Library



The undersung physiology of trees!

The Jamborees

Visiting Scout Jamborees is a long-standing tradition of Summer Roadshow. Jamborees see participants of a wide range of backgrounds which is perfect for our mission of science outreach.

Experiment Spotlight – Bubbly Crystals



Intent focus at “Bubbly Crystals”

Based on Sir Lawrence Bragg’s model of metal structure based on bubbles. Tiny uniform bubbles are extruded onto a soapy dish. With a bit of dexterity, we can see plastic and elastic deformations, dislocations, and more!

Experiment Spotlight – Minimal Surfaces



A debut at WSIJ for “Minimal Surfaces”, created by committee member Mara. Our new mathematics experiment is about the mathematics of soap films and bubbles. These are surfaces which seek to minimise their area. With different shapes of wire frames, we can predict, create and investigate an interesting variety of shapes.

Experiment Spotlight – Suspension Bridge



One of our proudest, and the largest of our experiments, “Suspension Bridge”. While the kids are standing on and crossing the bridge there’s plenty of engineering to talk about in forces, tension and materials.



Everyone was keen to crack John’s ‘magic trick’ at “Kruskal’s Count”. A group of children begin the game on separate playing cards, arranged

in a circle. By the end, they all converge on a single card. It turns out this is a game based on probability and Markov chains!

A Farewell

Alas Norjam was the final leg of our tour, and the end of Summer Roadshow was upon us. A tremendous seven weeks on the road had passed way too soon. Our only remaining stop after pack up was the “cupboard” back in Cambridge, to store all until our next event: Winter Roadshow 2025.



Everything returning to the van until next year.

This year we were delighted to see over 5000 children. A well-earned rest was due for some of our committee who had spent far too long camping in fields and driving up and down the country.

Every year Cambridge University students make long lasting friendships through CHaOS, and particularly Summer Roadshow. A large proportion of volunteers who join us in the summer return year upon year. And many are passionate to join our committee and help run the future of CHaOS.

CHaOS is also an opportunity to develop valuable skills such as teamwork and communication. It’s also a great way to explore and gain experience teaching.

Acknowledgements

We've met so many lovely teachers, staff and volunteers at or events this year. We'd like them all.

CHaOS would also like to thank those who volunteered for the 2025 roadshow as enthusiastic demonstrators.

Finally, we would like to thank our sponsors for making the roadshow possible with their generous support.

Until next year,

CHaOS

Cambridge Zero Community Day

Hunstanton Primary School

Long Sutton Library

Churchill Park Academy

King's Lynn Academy

Orchards CofE Academy

Watlington Community Primary School

Newcastle Castle

Central Walker CofE Primary School

Walbottle Academy

Cheviot Primary School

Atkinson Road Primary Academy

Leeds Central Library

Bramhope Scout Campsite

Leeds City Academy

Temple Learning Academy

Co-op Academy Grange

Alder Tree Primary

Manchester Central Library

Prestwich Library

Parrenthorn High School

Peel Hall Primary School

Briscoe Lane Academy

Ramsbottom Library

Birkenhead Central Library

Lache Library

Little Sutton Library

Halton Lea Library

Ellsmere Port Library

Wallasey Library

West Sussex International Jamboree

Norjam

