

From Bubbles to Bernoulli: The Big Bang Fair 2023

The 2023 Big Bang Fair for UK Young Scientists and Engineers featured several thousand students visiting the Birmingham NEC to experience hands-on activities, live shows and exhibits from many organisations and institutions.

Despite being a smaller fair than previous years, there was no less variety on show. From Williams Racing simulators to the live stick insects of the Royal Entomological Society. The IMA contributed to the variety of the event with four pieces of the large outreach kit and the ‘Can you Beat the Cube?’ challenge.

The Bernoulli blower and soap film bubble demonstrations were a hit with the students, as always. However, this year it was the aerofoil demonstration which prompted the most intriguing questions from budding mathematicians. My personal favourite was:

Why is an aircraft wing a triangle and this aerofoil is a rectangle?

An excellent question which prompts discussion on many practical aircraft aerodynamics principles. These include drag reduction, structural load distribution and the addition of wing tips, which students were amazed to discover are also found in nature, for example when birds of prey extend feathers at their wingtips to minimise drag.

Students exploring the fair were given the challenge of meeting individuals from different STEM professions, though one young attendee was curious enough to ask:

Which of these professions are you?

Controversially, the profession of ‘mathematician’ didn’t appear among the options! For now we’ll take this as a compliment that mathematics is so fundamental to engineering and science that it fits under all the roles, but this is certainly on our feedback list for future events!

Vanessa, IMA Education Manager, was supported by her colleague Jaydene in running the ‘Can you Beat the Cube?’ challenge, where students must assemble a foam cube against the clock. The day one fastest time of 30.21 seconds turned out to be insurmountable!



Nathan upstaged by the Bernoulli blower and with ice cream!

On the other side of the IMA stand, I joined Big Bang veteran Dr John Meeson FIMA with the student assistants: Luna, Ollie, Gemma, Rachel and Bethany. All the IMA representatives did an excellent job this year, inspiring and entertaining hundreds of students each over three days.

Looking to the future of the Big Bang Fair, EngineeringUK anticipates future editions to increase in size, matching its previous heights in terms of the number of volunteering organisations. A possible model for future involvement could be a collaborative one. This year, an aviation and aerospace venture called Generation Aviation allowed several exhibitors to join forces and highlight the possibilities in this recovering but buoyant industry sector. A similar opportunity might allow the IMA to promote mathematics as part of a wider conglomerate, perhaps shining a brighter light on mathematics as a discipline at future events.

As always, it was a pleasure volunteering on the IMA’s Big Bang stand, working with enthusiastic exhibitors and showcasing unexpected maths to engaged school students.

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Students, exhibitors and even the dinosaur, engaging with the soap bubble activity and the aerofoil exhibit