

A portrait of Professor Jonathan Cooper, a middle-aged man with short, grey hair, smiling. He is wearing a blue polo shirt. The background of the portrait is a plain, light-colored wall. The portrait is set against a larger background of purple and white geometric shapes.

Professor Jonathan Cooper

Research Chair

A decorative graphic consisting of two thick, wavy, intertwined lines. One line is blue and the other is magenta. They start from the left side of the page and curve downwards and to the right, ending near the bottom right corner.

Professor Jonathan Cooper is the Royal Academy of Engineering Airbus Sir George White Research Chair in Aerospace Engineering. He will hold this position from 2013 to 2018 to develop a programme of research on the integrated design of advanced novel wing architectures for commercial jet aircraft.

“My Research Chair has enabled me to concentrate on working closely with the aerospace industry and to develop a world-leading research team in the areas of aircraft loads and aeroelasticity.”

RESEARCH

Professor Cooper's research programme focuses on the development of novel devices and configurations that could substantially improve the environmental impact and performance of civil aircraft. His group uses a combination of mathematical modelling and experimental approaches to develop novel devices and structural designs, and to also investigate ways to maximise the efficiency of the design process. The Research Chair provided a timely opportunity for Professor Cooper to realise an ambitious research programme: “Being a Research Chair has helped me to establish an internationally leading research group at the University of Bristol. Since starting this post, my group has rapidly expanded to a team of 16 PhD students and eight research assistants,” he explains.

Current research themes for the group include the development of a wing-tip loads alleviation device that is currently the subject of a patent application. It is also looking at developing modelling approaches for designing more flexible wings.

IMPACT

The novel design concepts being developed by Professor Cooper's group have the potential to help with meeting aircraft fuel consumption and emissions targets set by current European aerospace initiatives. To support this work, Professor Cooper has attracted additional funding from the EU Marie Curie training network and the UK Aerospace Technology Institute.

As a result of the collaboration, highly skilled postgraduates and postdoctoral researchers

at the University of Bristol have undertaken placements at Airbus' nearby site to work with its engineers. These researchers have benefited from access to Airbus numerical models and software, and Airbus has benefited from the application of the researchers' methodologies on real aircraft computational models. More generally, the close interaction with Airbus engineers has also helped to guide the direction of research at the university.

FUTURE PLANS

There are plans for Professor Cooper's relationship with Airbus to continue through applications for funding from a variety of sources.

“With the ever demanding and challenging requirements for new technologies in aerospace engineering, it is essential to maximise the combined strengths of both industry and academia,” explains Mark Howard, Head of R&T Business Development and Partnerships UK, Airbus Group. “The Research Chair has enabled Airbus engineers to work closely with the University of Bristol to support their development of future aircraft designs.”

RESEARCH CHAIRS AND SENIOR RESEARCH FELLOWSHIPS SCHEME

The Research Chairs and Senior Research Fellowships scheme aims to strengthen the links between industry and academia by supporting exceptional academics in UK universities to undertake user-inspired research that meets the needs of industrial partners. Awards are co-funded by the Royal Academy of Engineering and the industry partner and last for five years.