

## Research project and supervisor team

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| <b>Supervisory Team</b>   | Supervisors:<br>Dr. Jian Yang (Lead supervisors, <a href="#">Personal Webpage</a> )<br>Dr. Dimitrios Chronopoulos (Co-supervisor, University of Nottingham, UK)<br>Prof. Jonathan Cooper (Co-supervisor, University of Bristol, UK)  |
| <b>Short introduction &amp; description of research project</b> | <p>Lightweight composite laminates have been increasingly used in modern aircraft structures such as the Boeing 737 and Airbus 350 XWB, due to its light weight and high strength, and high stiffness/strength-to-mass ratio. Recently, the development of advanced manufacturing processes, such as automated tow-placement (AFP) techniques allow the production of variable-angle tow (VAT) composite laminates, in which the fibres follow the curvilinear paths. This technique enlarges the design space for optimal structural performance in terms of in-plane stiffness, strength and buckling properties. In comparison, there is limited work reported on the optimal design and analysis of VAT composite aircraft wings and fuselages in terms of the forced vibration response behaviour, in particular, the vibration power flow transmission and suppression properties.</p> <p>This research addresses the challenges by developing new aeroelastic design, analysis, and optimization methods for lightweight composite aircraft structures to reveal their complex vibration generation, transmission, and dissipation mechanisms. The project also seeks to discover unknown dynamic behaviour, and to apply the developed methods to achieve optimal structural designs of aircraft wings and fuselages for vibration and flutter suppression. This will provide new insights into understanding complex dynamic effects and vibration energy flow mechanisms for composites aircraft structures and facilitate more reliable and effective designs with enhanced structural performance.</p> <p>The successful candidate will work with a global team of experienced researchers working on structural dynamics and aeroelasticity. The team includes Prof. Jonathan Cooper, Airbus Chair Professor, Fellow of the Royal Academy of Engineering, and the current President of the Royal Aeronautical Society. Upon successful completion of the project, the student will be awarded PhD degree University of Nottingham UK, which can be certified by the Ministry of Education, China.</p> |
| <b>Contact points</b>   | For more information about this full scholarship, please contact Dr. Jian Yang at <a href="mailto:Jian.Yang@nottingham.edu.cn">Jian.Yang@nottingham.edu.cn</a>   |