Purpose of role
The design of new aircraft models is a very complex and time-consuming task. Requirements of different disciplines, such as aerodynamics, structural mechanics, flight physics, or fabrication, need to be fulfilled, while finding an optimal design for defined aspects (e.g. minimum weight). Therefore, a multidisciplinary design optimisation (MDO) process is used, where the different disciplines are taken into account simultaneously during optimisation.

The successful applicant is expected to implement a standardized data interchange format for efficient and seamless integration among the discrete software modules in the existing MDO platform. Additionally, the applicant is expected to extend the optimisation methodology for airframe design throughout all phases. The PhD work will combine substantial theoretical and computational developments.

<table>
<thead>
<tr>
<th>Main responsibilities</th>
<th>% time per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical review</td>
<td>10%</td>
</tr>
<tr>
<td>▪ Review existing work relevant to the technical area of research.</td>
<td></td>
</tr>
<tr>
<td>Research work</td>
<td>40%</td>
</tr>
<tr>
<td>▪ Conduct original research contributing towards a PhD qualification in ultrasonic wave interaction with damage.</td>
<td></td>
</tr>
<tr>
<td>Develop and test methods</td>
<td>30%</td>
</tr>
<tr>
<td>▪ Develop and test new methods to contribute to the technical area of research.</td>
<td></td>
</tr>
<tr>
<td>Reporting</td>
<td>10%</td>
</tr>
<tr>
<td>▪ Prepare project report and scientific publications</td>
<td></td>
</tr>
<tr>
<td>General tasks</td>
<td>10%</td>
</tr>
<tr>
<td>▪ Accomplish general tasks in the Composites Research group</td>
<td></td>
</tr>
</tbody>
</table>
## Person specification

<table>
<thead>
<tr>
<th></th>
<th>Essential</th>
<th>Desirable</th>
</tr>
</thead>
</table>
| **Skills**                      | ▪ Good communication skills, both orally and in written English, laying groundwork for the preparation of scientific articles and presentation of research at network meetings and conferences  
▪ Basic laboratory skills (safe operating practice) and use of instrumentation.  
▪ Well organised and self-motivated  
▪ Ability to work independently and as part of a team | ▪ Strong programming skills in C++, Fortran or equivalent.  
▪ Knowledge of data formats (e.g. mark up languages) and/or data modelling  
▪ Good communication skills German  
▪ Knowledge of computational modelling and simulations (FEM, CFD)  
▪ Knowledge in aircraft/airframe design |
| **Knowledge and experience**     | ▪ Research experience in a relevant area (see above).  
▪ Scientific writing skills  
▪ Good oral presentations | ▪ Computer programming  
▪ Mathematical Optimisation |
| **Qualifications, certification and training (relevant to role)** | ▪ Excellent Masters Degree in a relevant discipline (e.g. Civil/ Mechanical/ Aerospace Engineering or Applied Maths/Physics or similar), enabling the candidate to register for a doctoral degree | |
| **Statutory, legal or special requirements** | ▪ Eligibility criteria for Early Stage Researchers in Marie Skłodowska-Curie ITNs  

The University of Nottingham is focused on embedding equality, diversity and inclusion in all that we do. As part of this, we welcome a diverse population to join our work force and therefore encourage applicants from all communities, particularly those with protected characteristics under the Equality Act 2010.
Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University’s strategy, vision and values. The following are essential to the role:

Valuing people
Is friendly, engaging and receptive, putting others at ease. Actively listens to others and goes out of way to ensure people feel valued, developed and supported.

Taking ownership
Is clear on what needs to be done encouraging others to take ownership. Takes action when required, being mindful of important aspects such as Health & Safety, Equality, Diversity & Inclusion, and other considerations.

Forward thinking
Drives the development, sharing and implementation of new ideas and improvements to support strategic objectives. Engages others in the improvement process.

Professional pride
Is professional in approach and style, setting an example to others; strives to demonstrate excellence through development of self, others and effective working practices.

Always inclusive
Builds effective working relationships, recognising and including the contribution of others; promotes inclusion and inclusive practices within own work area.

Key relationships with others

Line manager
Dr. Ender Ozcan/Dr Louise Brown

Role holder
Marie Skłodowska-Curie Fellow