



2018-IPR-E-000-010554

**Computational finite element analysis of  
the human brain under extreme loading  
conditions (impact, blast)**

|  |   |
|--|---|
| <p><b>Position for:</b></p> <p>Trainee</p> | <p>As the science and knowledge service of the Commission, the mission of Joint Research Centre is to support EU policies with independent evidence throughout the whole policy cycle.</p> <p>The JRC is located in 5 Member States (Belgium, Germany, Italy, the Netherlands and Spain). Further information is available at: <a href="http://www.jrc.ec.europa.eu">http://www.jrc.ec.europa.eu</a></p> <p><b><u>Short description of activity:</u></b></p> <p>To date, the brain remains the most intriguing and unexplored organ in humans. Understanding its mechanical behaviour is crucial for the study of traumatic brain injury. Such kind of investigations are in particular important for blast loading of the brain which remains the most common cause of fatality in case of terrorist attacks.</p> <p>Computational models are a fast and reliable tool to analyse mechanically the brain. Mechanical simulations of the brain, usually making use of Finite element methods, have been used for impact or blast analyses.</p> <p>JRC has recently developed a finite element model for the human brain. The trainee collaboration will consists in (a) developing further that mechanical brain model and (b) making parametric studies under different blast loading conditions to evaluate the obtained results. The explicit finite element software EUROPLEXUS will be used.</p> <p><b><u>Qualifications:</u></b></p> <p><b><u>Essential:</u></b></p> <ul style="list-style-type: none"><li>• University degree in civil/structural engineering and MSc in a field relevant to the topic of the call (Applications from students currently preparing a thesis for an MSc degree are eligible –</li></ul> |
|--|---|

|                                   |  |
|-----------------------------------|--|
|                                   | <p>the thesis has to match with the project' subject)</p> <ul style="list-style-type: none"> <li>• Good knowledge of the English language (level B2)</li> <li>• Good analysing and problem-solving skills</li> </ul> <p><b><u>Advantage:</u></b></p> <ul style="list-style-type: none"> <li>• Previous research or professional experience relevant to the topic of the call</li> <li>• Experience in the use of explicit FEM software</li> </ul> <p><b><u>For general eligibility requirements, please read the rules governing the traineeship scheme of the JRC:</u></b></p> <p><a href="https://ec.europa.eu/jrc/en/working-with-us/jobs/temporary-positions/jrc-trainees">https://ec.europa.eu/jrc/en/working-with-us/jobs/temporary-positions/jrc-trainees</a></p> |
| <b>Unit / Directorate</b>         | <p>Space, security and Migration<br/>Safety and Security of Buildings</p> <p>Further information:<br/><a href="https://ec.europa.eu/jrc/en">https://ec.europa.eu/jrc/en</a></p>  |
| <b>Indicative duration</b>        | 5 months   |
| <b>JRC Site</b>                   | Ispra  |
| <b>Country</b>                    | Italy  |
| <b><u>JRC contact details</u></b> | <p><b>For any technical problems with your application, please contact:</b><br/><a href="mailto:HR-AMC8-RECRUITMENT-TOOLS-SUPPORT@ec.europa.eu">HR-AMC8-RECRUITMENT-TOOLS-SUPPORT@ec.europa.eu</a></p>   |