



Simulation of human pre-crash behaviour in future seat-settings

Background

Recently, an experimental study on the behaviour of car-occupants during pre-crash braking was carried out in the LowG-Lab of the Vehicle Safety Institute, involving volunteers in different seat settings. The kinematics as well as the muscular activation of the persons were captured and analysed regarding differences for braking-pulse, gender and seat positions.

https://www.trcpg.com/media/0lvn3kcy/2024-06-06_rccads_workshop_tugraz_sinfonia.pdf



Goals

- Adopt the existing LowG-Simulation model to the tests carried out – Compare the behaviour of existing active human body models (passive/neutral/braced) with the found experimental data
- Verify the simulation model's output on seat compression, pressure-distribution and global forces based on representative experimental data.



Tasks

- **Familiarization** with HBM-based occupant safety and FEM.
- **Creation of simulation setup** based on existing modules provided by VSI.
- **Simulation and analysis** of all variants of the simulation matrix (seat setting, "muscle-activation" of HBM, ...).
- **Analyse** differences of model and test results for seat-deformation, contact pressure and global seat reaction forces.

Suitable for students of

- MSc Mechanical Engineering/Mechanical Engineering and Business Economics

Organisational overview

- Start: anytime
- Performance bonus: € 2.500,- (up to 4000,- for excellent work)
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