Friedrich-Alexander-Universität Erlangen-Nürnberg

Seminar über Fragen der Mechanik

zu folgendem Vortrag wird herzlich eingeladen

Dienstag, 05.07.2011, 14:00 Uhr, Egerlandstr. 5, Raum 0.044

Characterization and Evaluation of Frontal Crash Pulses for USNCAP 2011

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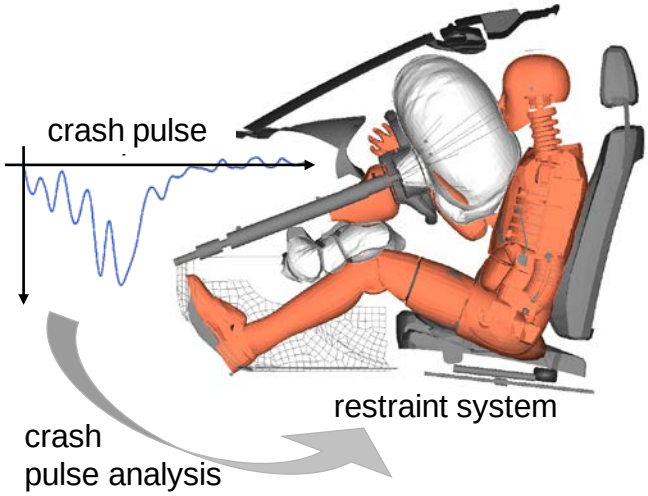
Occupant restraint systems are essential parts of today's vehicles to reduce the chance of occupant injuries during collisions. In order to evaluate the restraint performance, computer simulations, sled tests and vehicle barrier tests are conducted for several frontal collision types. A substantial parameter in this context is the acceleration field effective on occupants during a barrier test, the so-called crash pulse. Crash pulses are input for sled tests and simulations and strongly influence the development of restraint systems, since their variations have significant influence on the overall system responses.

Pulse characterization is of great importance in many fields of occupant restraint system development. Target of the investigation is to establish a pulse assessment criterion that allows a sound comparison of pulse "severity".

A measure for the quality of pulse criteria is given by the correlation between dummy values and pulse criteria values. At first the correlation of the relevant injury parameters regarding the new USNCAP rating is analyzed, evaluated and explained. Existing criteria for pulse characterization are compared regarding their correlation to occupant injuries in the USNCAP loadcase for a large number of crash pulses over a range of vehicle types. The investigation is carried out in different vehicle environments for driver and passenger. On basis of the analysis and the insight in the main mechanisms driving the injury parameters an outlook is given on how to derive an extended, more general criterion.



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