The Collision of Unbelted Passenger with Assessment of Various Vehicle Interior

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This paper describes the conception of vehicle interior which can help decrease the injury risk of unbelted passenger. This paper is primarily aimed to the field of rail vehicles, but the results are useful for more transportation industries. Some computer simulations for passive safety performance assessment were conducted in previous years. The FE models of the interiors based on data from actually operated vehicles were prepared for this purpose. The newly prepared simulations are close to the real interior models. Combinations of rigid walls were used for modelling. Each model contains a short python code which allows change of interior disposition. This approach is close to an optimisation process. The main goal is to compare all possible configurations of interior. In practise it is usually obvious which change can improve the passive safety, but with numerical approach is possible to find structures with unknown influences. The simulations were performed in software environment PAM-CRASH. It is used a dummy Multibody model of the human body ARB Hybrid III 50th percentile.

Keywords: Passive safety, interior, crash, crashworthiness, biomechanics

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