

Design and analysis of mini baja considering rollover safety

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ABSTRACT

Mini Baja is a collegiate competition sponsored by the Society of Automotive Engineers (SAE). The objective is for a team of students to design, fabricate, and race an off-road vehicle powered by a ten horse power Briggs and Stratton gasoline engine. The vehicle is required to have a combination frame and roll cage consisting of steel members. The frame design discussed in this thesis is compliant to the 2010 Baja SAE Rules. Finite Element (FE) modeling was used in Mini Baja rollover analysis in this thesis. FE modeling has been indispensable in the development of component design, and vehicle rollover crashworthiness evaluations. This thesis utilizes commercial FE Code, LS-DYNA to simulate roof strength according FMVSS-208. The numerical results further served as reference data for the frame design of Mini Baja considering rollover strength.

Keywords : SAE Mini Baja、FMVSS-208、LS-DYNA

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