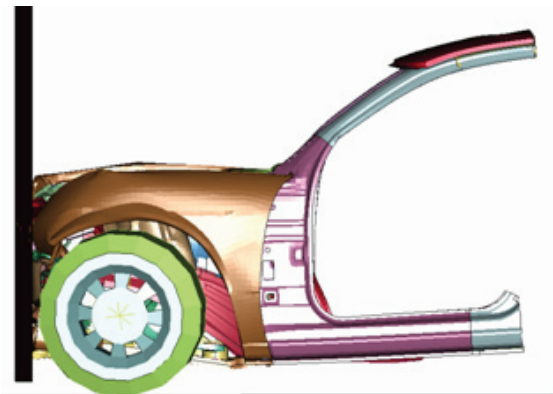


Optimization and Robustness Analysis with optiSLang & LS-Dyna

Optimization

optiSLang is one of the most efficient toolboxes for multidisciplinary optimization, sensitivity studies, robustness and reliability analysis as well as robust design optimization. For optimization and robustness tasks, optiSLang can increase the possibilities of LS-Opt for LS-Dyna significantly. For instance, optiSLang can be used as high-end tool for parametric optimization regarding discrete optimization and large optimization problems with more than 15 variables.



Simulation of crash behaviour

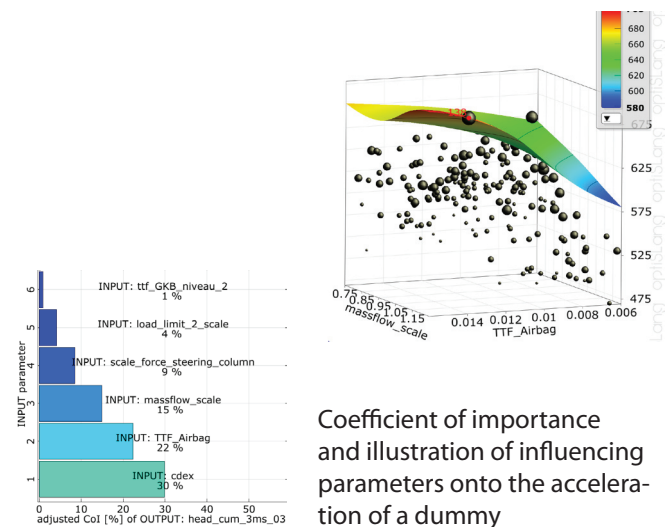
Robustness Analysis

Robustness analysis becomes more and more important in the virtual product development of the automotive industry. Thus it is important that the robustness of a design against natural scatterings and the influence of numerical noise onto the analysis results are examined. In this context, optiSLang can handle very complex analyses of safety components like for active and passive vehicle safety, passenger or pedestrian protection.

For several years, Dynardo is introducing robustness analysis into the standards of virtual product development of several automobile manufacturers. For this integration and the integration into LS-Dyna, optiSLang is developed continuously.

Integration into LS-Dyna

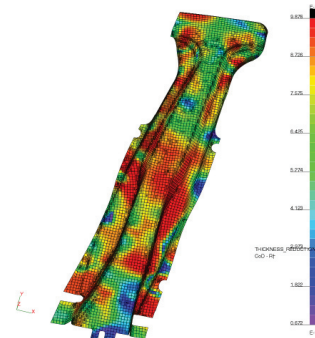
The integration of LS-Dyna calculations into optiSLang is done by a graphical parameterizing editor. With help of the process integration of LS-Dyna, highly nonlinear physical behaviour of structures can be analysed and optimized.



Coefficient of importance and illustration of influencing parameters onto the acceleration of a dummy

Visualization

An important component of robustness analysis is the visualization of variations and correlations between input and output scatters. Dynardo has developed the post processor SoS - „Statistics on Structur“ that allows the analysis and assessment of statistical measures on finite element structures. SoS played a significant role for the acceptance of robustness analysis in FEM calculations.



Coefficient of determination for thickness reduction of a B-pillar