

Vorstellung eines komplexen physikalischen Modells zur Berechnung von Fahrzeugkollisionen unter Berücksichtigung der verfügbaren technischen Daten

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Zurzeit gibt es kaum eine Lösungsmethode für Fahrzeugzusammenstöße mittels der Stoßhypothese, die sowohl in theoretischer Hinsicht als auch aus Anwendungssicht optimal ist. Im Beitrag wird daher ein Zusammenstoßmodell vorgeschlagen, das positive Aspekte der unterschiedlichen bekannten Lösungsmethoden verbinden kann. Dabei wird aufgezeigt, wie man Impulssatz, Energiesatz und die Abgleitproblematik grafisch in anderer, anwenderfreundlicherer Weise darstellen kann.

Computer programs for car accident analysis usually collect values for given set of "input" variables and then calculate values for another given set of "output" variables. The problem is that every particular car accident has unique set of values which are known and we have to calculate the rest. Hence the computer program asks for some values which we do not know so we have to try some and then we have to compare the calculated results with known real values. This "try and fail" method is not anyhow deterministic and it is not possible to write down procedure how we have found the result and whether it is the only result or not.

The best solution of the problem would be to give the program all known values for the particular accident and then the program should find all possible solutions of given problem. Such program does not exist because it has to have very powerful solver, which could derive its own equations from the basic physical principles.

However some compromise of these two opposites is possible. The program requires values for some small number of given "input" variables and then it allows the user to add the values or "min-max" interval of other variables if they are known. Each of this new added input value gives new restriction for set of possible output values. These restrictions can be graphically represented by some areas in the momentum graph. The set of possible results is then given by the over-flap of all the areas.

The article describes how to calculate the shape and size of the area belonging to each condition. Many of these conditions are not linear and that's why the corresponding area has an elliptic or even more complex shape.

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Zitat

[Sachl, J.](#); [Rábek, V.](#): Vorstellung eines komplexen physikalischen Modells zur Berechnung von Fahrzeugkollisionen unter Berücksichtigung der verfügbaren technischen Daten. Verkehrsunfall und Fahrzeugtechnik 41 (2003), pp. 22 - 30 (#1)

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