

# Computer Based Fatigue Analysis of Vehicle Components

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**Abstract.** This paper presents a short summary of research, in which a FE-based damage calculation of a vehicle steering system was carried out. That damage calculation is based on real vehicle measurements. According to the measured system loads, forces on system components are calculated. These forces are used to compute time-series of stresses and strains in the component. The stresses and strains are classified and compared to material data. From this comparison a damage value can be extracted.

**Key words:** *Fatigue analysis, Damage calculation, Steering system, FEM.*

## 1. Introduction

Regarding material resources and production costs, it is important not to oversize components of mechanical systems. Especially in vehicles, components are designed to have a certain durability. Every supplier of a component likes to keep this durability value as accurately as possible, in order to minimize his efforts and costs, but also to avoid the risk of supplying a too early failing component.

The estimation of durability of a component is, therefore, a very important part in the development process, which can be done either with measurements or