Vehicle dynamics design of the electric car Mute

Abstract:
In light vehicles the ratio of driver mass to total vehicle mass is much higher than in common vehicles. To guarantee equal driving comfort for heavy and light passengers a constant eigenfrequency over a wide range of wheel travel is necessary. With the developed kinematics this is possible with linear springs. A quality criterion to develop the basic damper trace is defined. Due to the same damping power difference of bump and rebound, the car has a constant dynamic ride height. Rear wheel drive electric vehicles and highly electrified hybrids can greatly benefit from torque vectoring as a means to increase their recuperation capability. Further development including a flatnessbased feed forward control will make it possible to handle all normal driving situations with torque vectoring aided recuperation. Significant benefits are possible especially in combination with low rolling resistance tires as used in the concept vehicle Mute.