

# Exploring Smart Sensor Systems

An exploration of:  
Slip Angle Sensors

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## Overview & Motivation

Vehicles are more attainable than ever and are advancing quickly. Modern cars are equipped with sophisticated systems that enhance performance, safety, and driver comfort. Vehicle dynamics is a tremendous topic and an area of growing interest, especially as more automated driving technologies emerge. Vehicle dynamics is the study of vehicle motion in relevant user operations [1], which encompasses factors like kinematics, forces, and moments acting on a vehicle during acceleration, braking and steering. The core of vehicle dynamics involves the following primary aspects: the mechanisms that disturb a vehicle's state (inputs) and the mechanisms through which the vehicle responds (outputs). Arguably the most critical aspect of vehicle dynamics is tire behavior, specifically how a tire generates lateral force during cornering. Central to this behavior is the concept of slip angle – the difference between the direction a vehicle is traveling and the direction that the body of the vehicle is pointing (heading vs. true heading) [2]. Understanding slip angle is essential for analyzing handling characteristics, improving stability control systems, and optimizing driver feedback.

## Vehicle Dynamics

[1]

## Works Cited

- [1] S. ÜNAL, “The effect of social media use to the time spent with family members,” *International Journal of Eurasia Social Sciences / Uluslararası Avrasya Sosyal Bilimler Dergisi*, vol. 9, no. 31, pp. 550–578, 2018, ISSN: 21461961. [Online]. Available: <http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,sso&db=a9h&AN=129236793&site=ehost-live&scope=site&custid=s8356098> (visited on 02/28/2018).