Real time vehicle state estimator

**Motivation:**
Provision of additional vehicle state data which cannot be measured directly for the secondary chassis control systems.

**Problem:**
How can the vehicle state be determined in a stable and reliable way in realistic and especially critical driving situations (e.g. slow increase of sideslip angle), influenced by disturbance variables (e.g. road bank angle, μ split etc.)?

**Objective:**
Robust real-time estimation of the vehicle state:
- Sideslip angle
- Estimation of lateral dynamic friction factor
- Inclination compensation

**Solution:**
Development of a non-linear two-track vehicle model based on an extended discrete Kalman filter (EKF) with primary disturbance variable estimator.