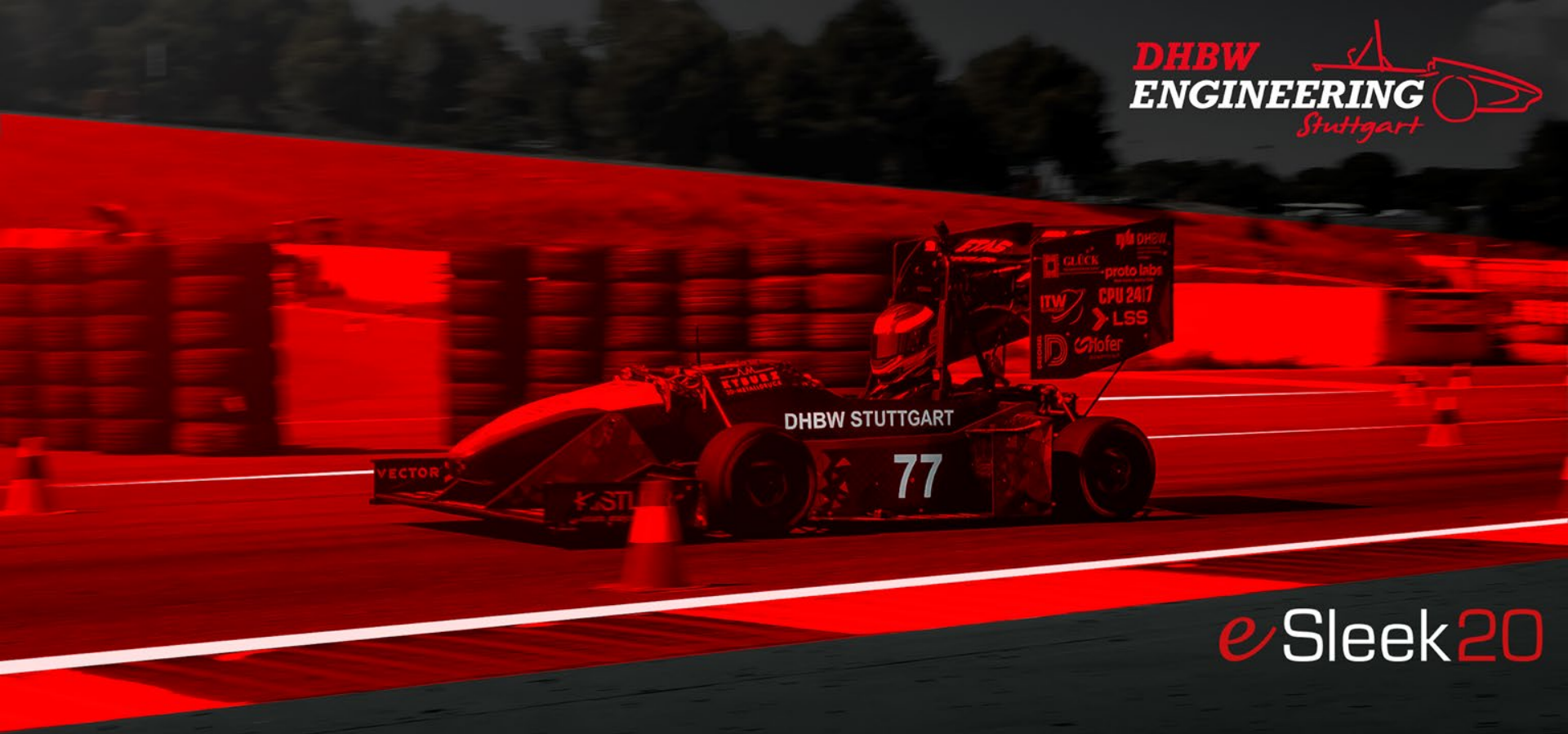
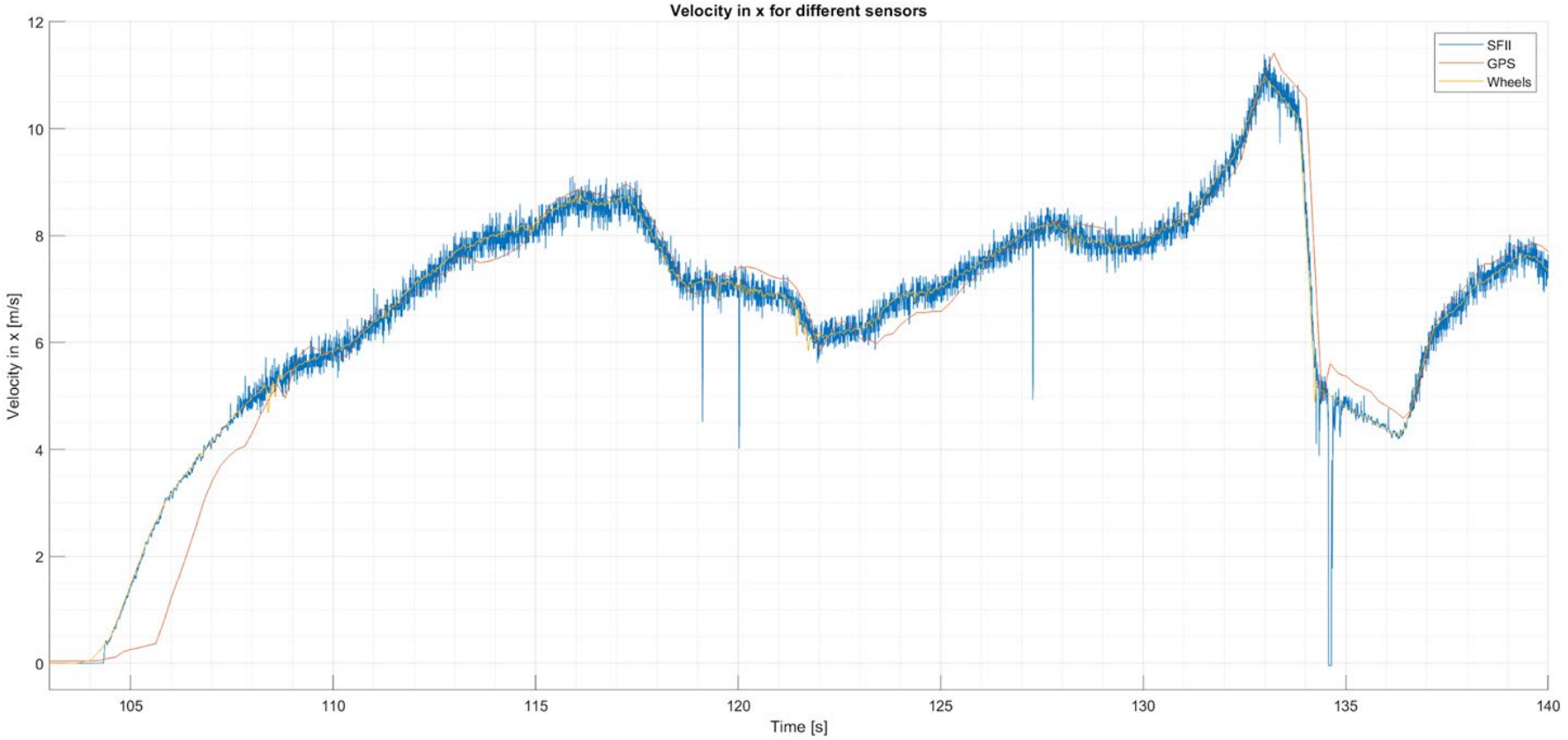


State Estimation

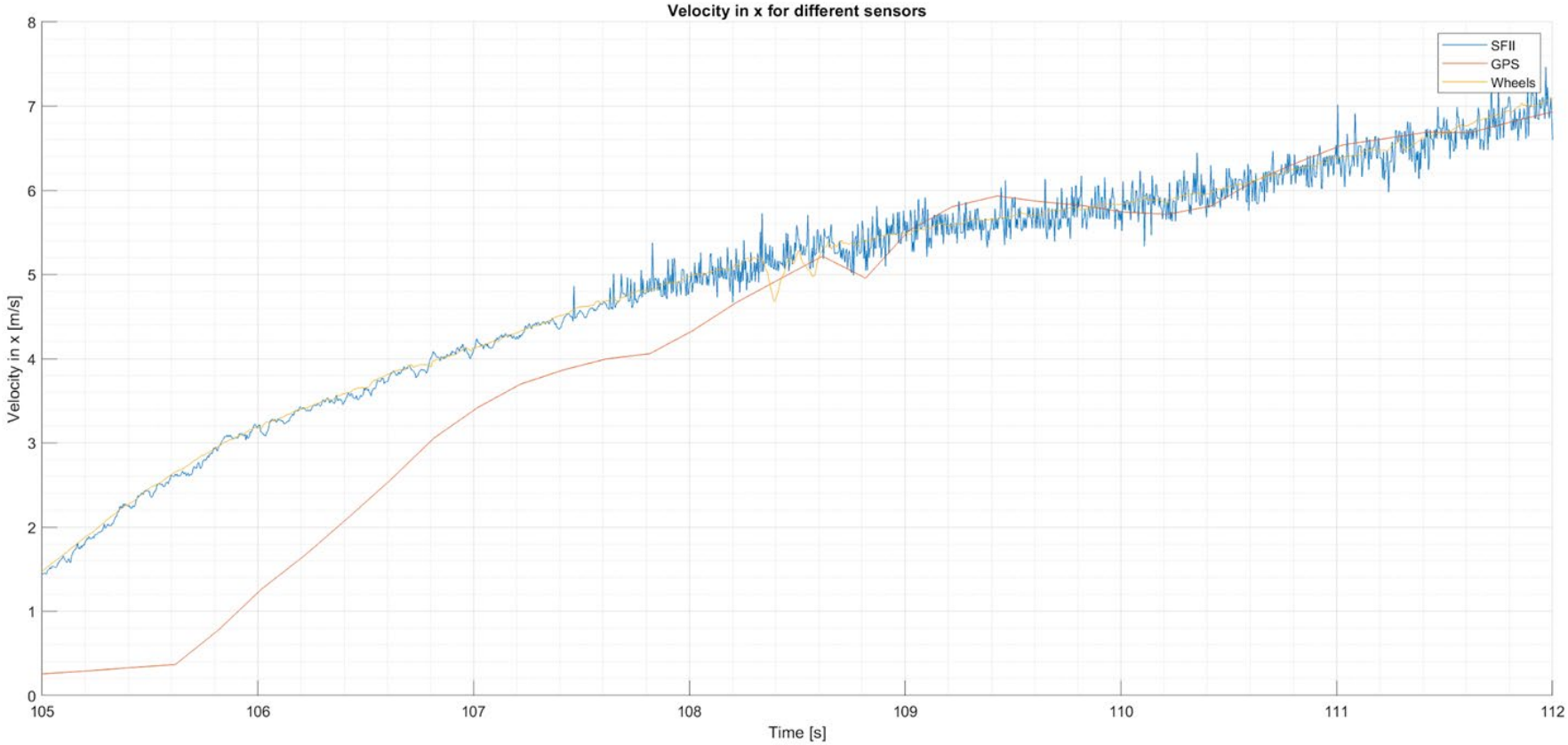
Done

- Integrate velocity measurements from multiple sources
- Implement Kalman Filter Bank outlier detection for v_x

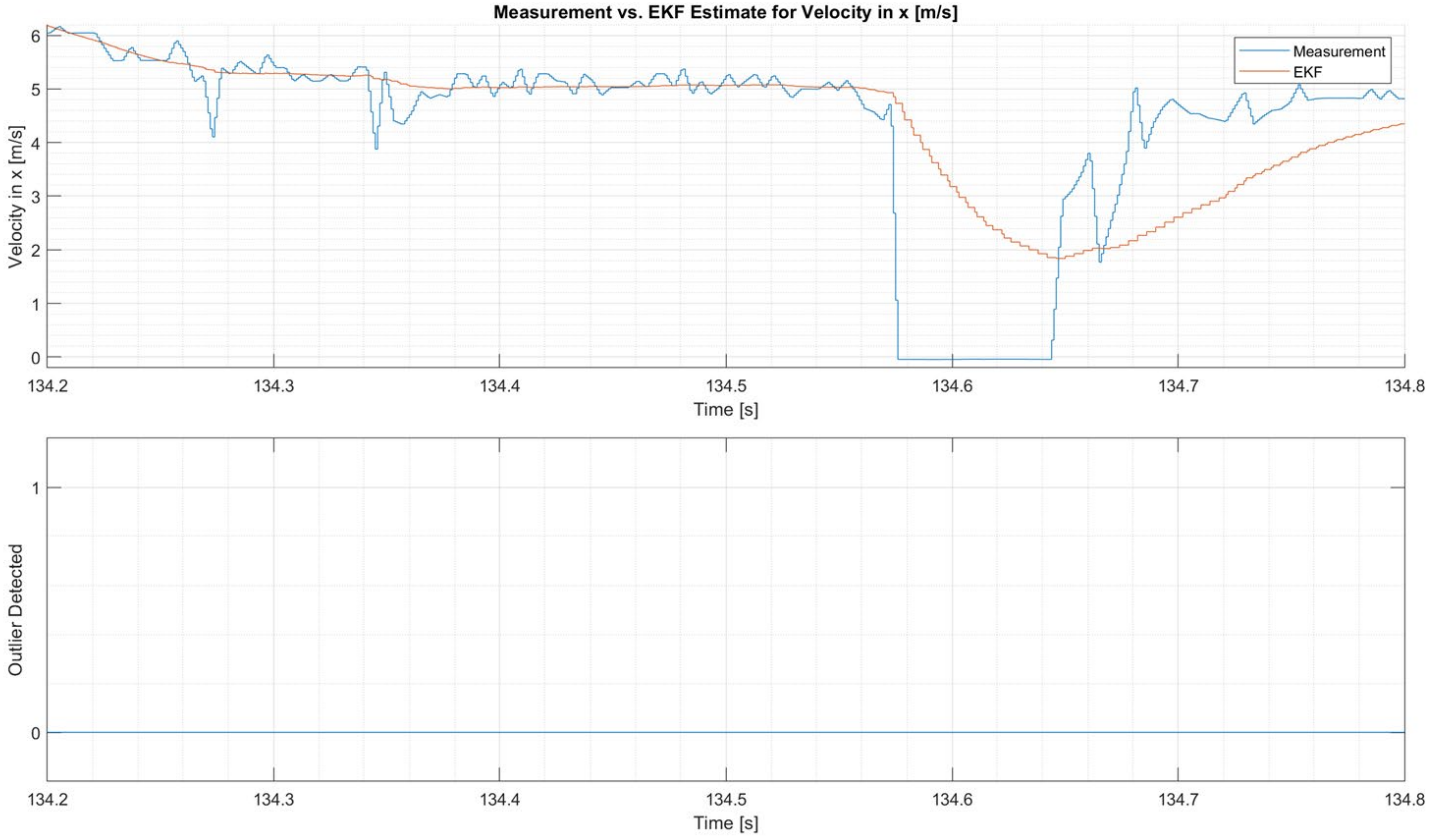
Velocity Measurements



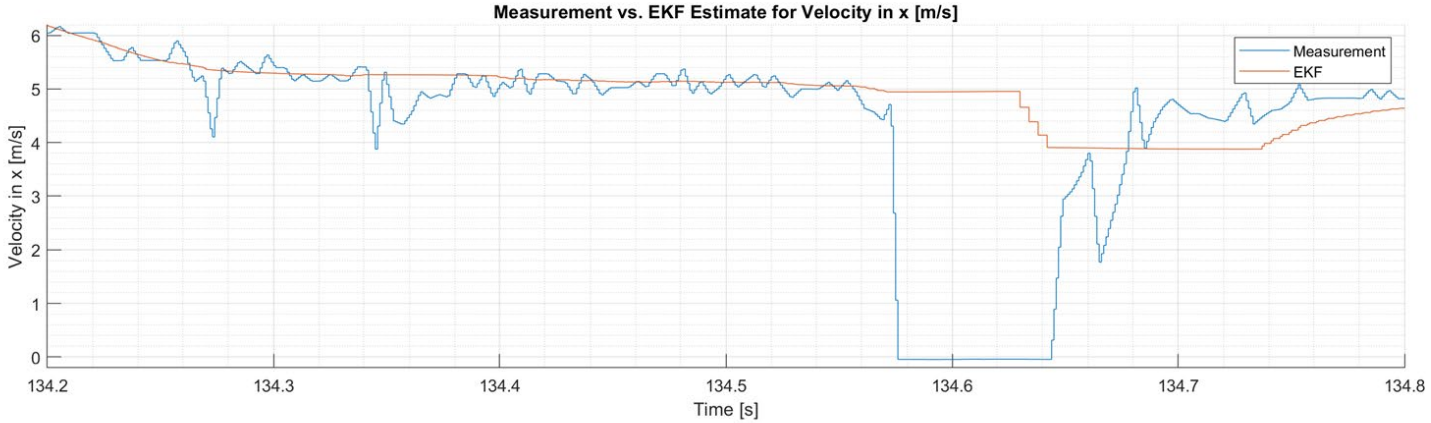
Velocity Measurements

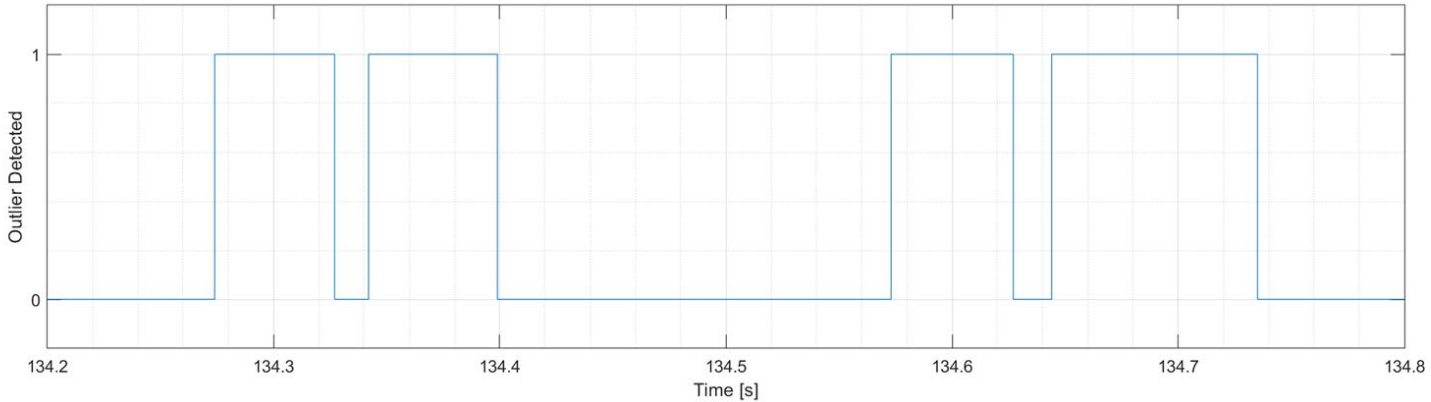


Without Outlier Detection



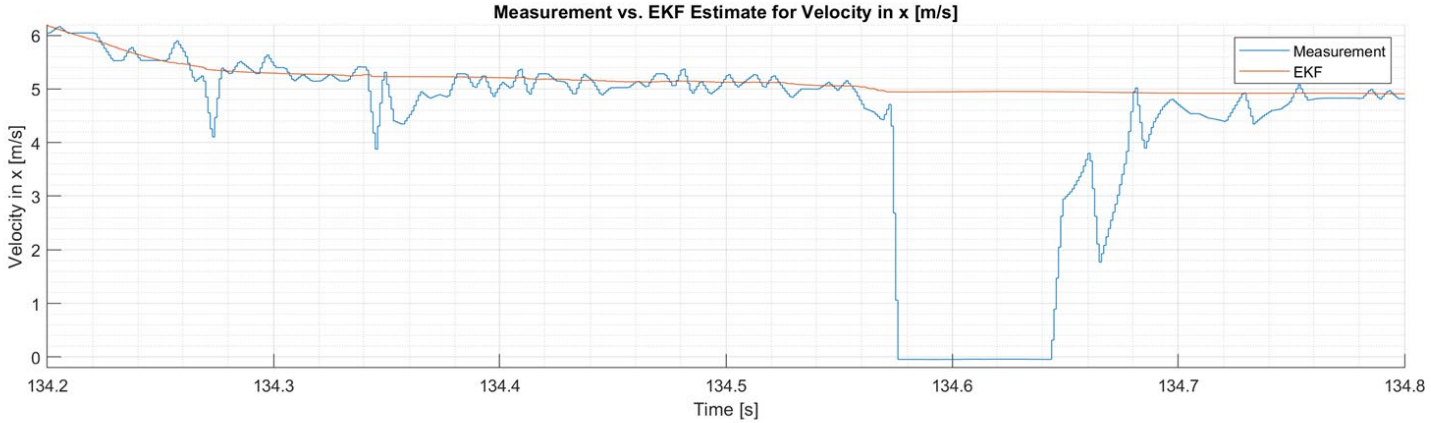
With Plausibility Check

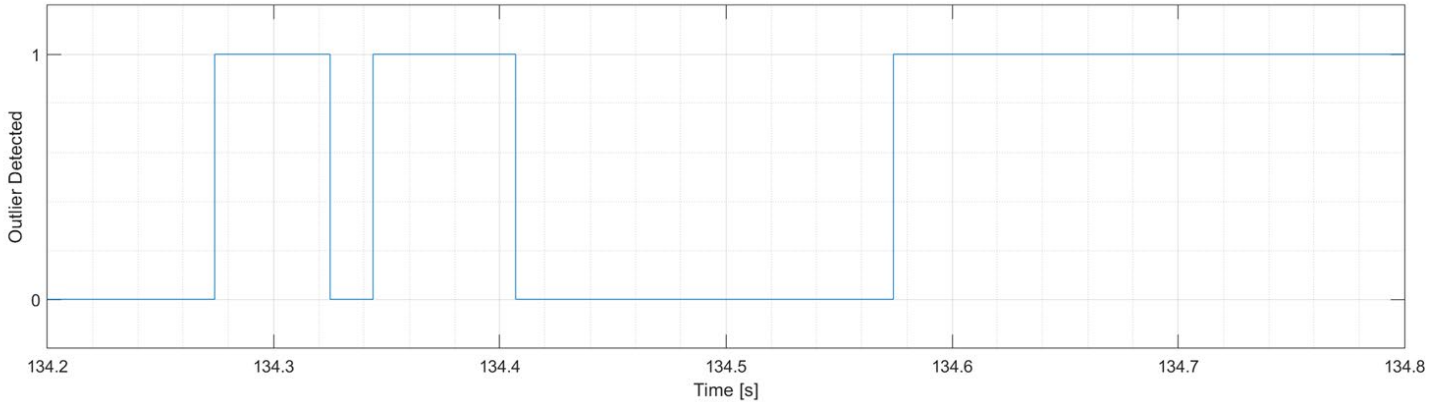




Debouncing: 50 ms

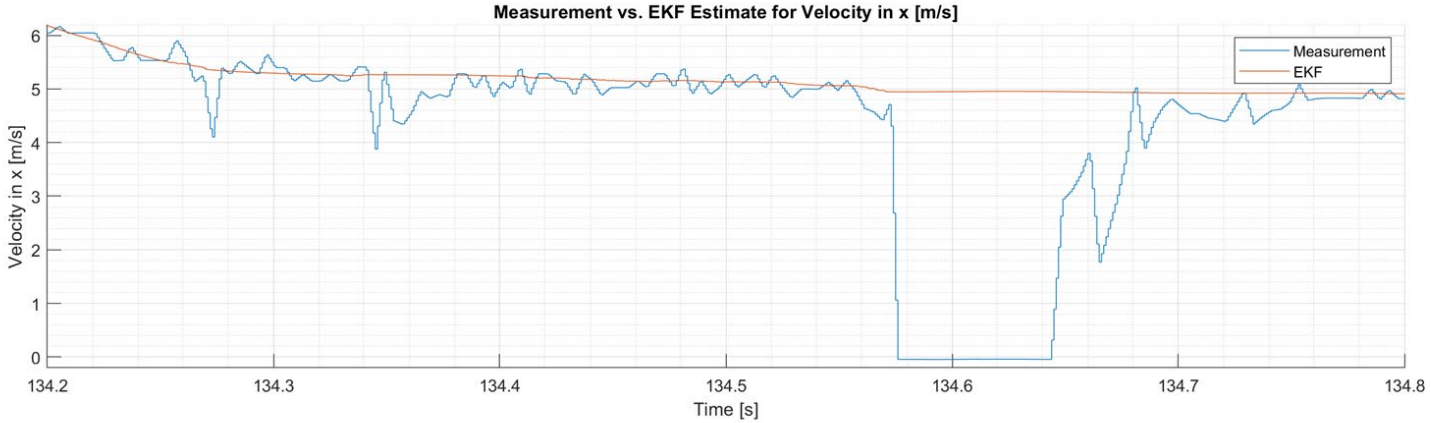
With EKF Bank

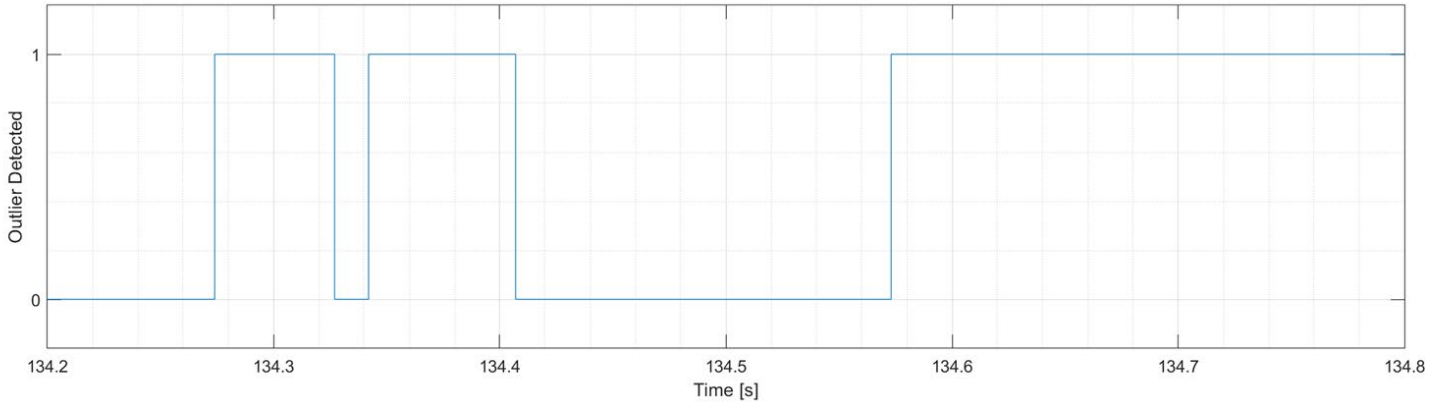




Debouncing: 50 ms

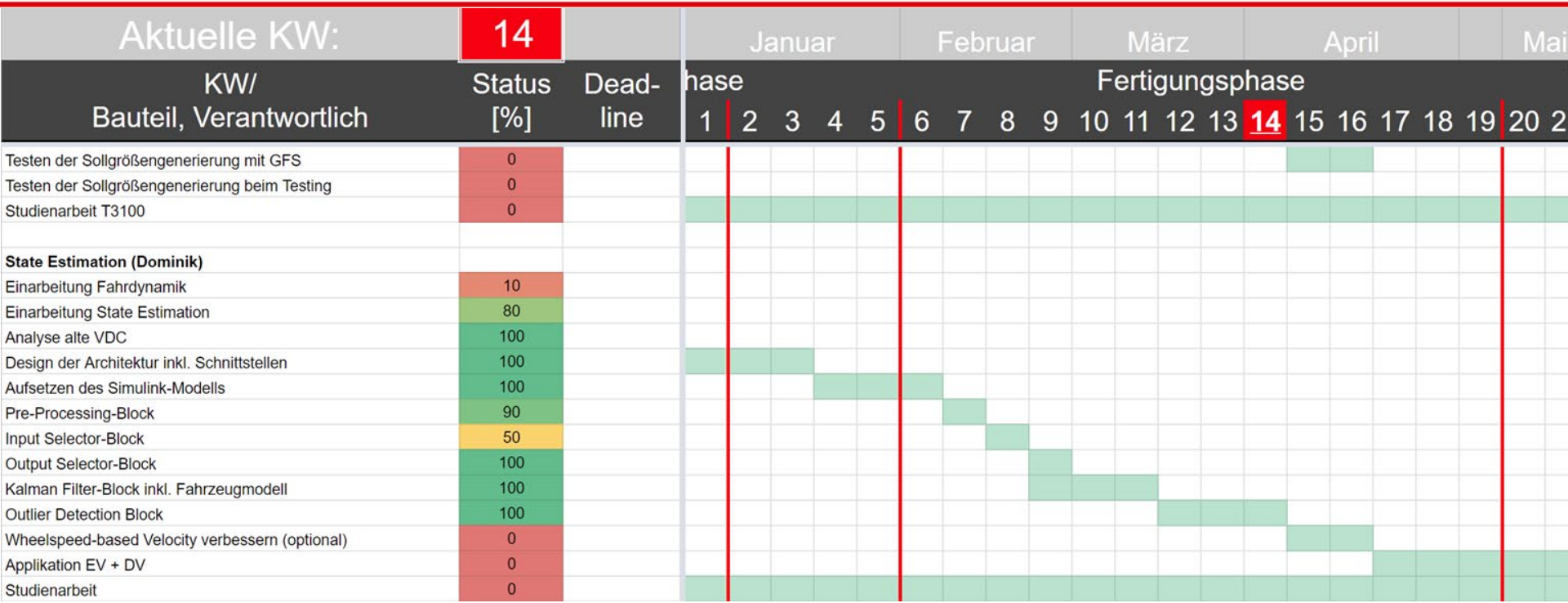
With Plausibility Check + EKF Bank





Debouncing: 50 ms

Schedule


Aktuelle KW:
14
Januar
Februar
März
April
Mai
KW/
Bauteil, Verantwortlich
Status
[%]
Dead-
line
hase
Fertigungsphase
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 2
Testen der Sollgrößengenerierung mit GFS 0
Testen der Sollgrößengenerierung beim Testing 0
Studienarbeit T3100 0
State Estimation (Dominik)
Einarbeitung Fahrdynamik 10
Einarbeitung State Estimation 80
Analyse alte VDC 100
Design der Architektur inkl. Schnittstellen 100
Aufsetzen des Simulink-Modells 100
Pre-Processing-Block 90
Input Selector-Block 50
Output Selector-Block 100
Kalman Filter-Block inkl. Fahrzeugmodell 100
Outlier Detection Block 100
Wheelspeed-based Velocity verbessern (optional) 0
Applikation EV + DV 0
Studienarbeit 0

Next Steps

- Switch inputs when outlier persists
- Implement generic IMU Fusion
  - Variable number of IMUs
  - Inputs: positions in car and measurements
  - Output: optimal fused measurements

Questions

- In which cases should raw measurements instead of EKF be used?
  - When IMUs/inputs are unavailable?
- How to get v_x and v_y from v_total measurement?