



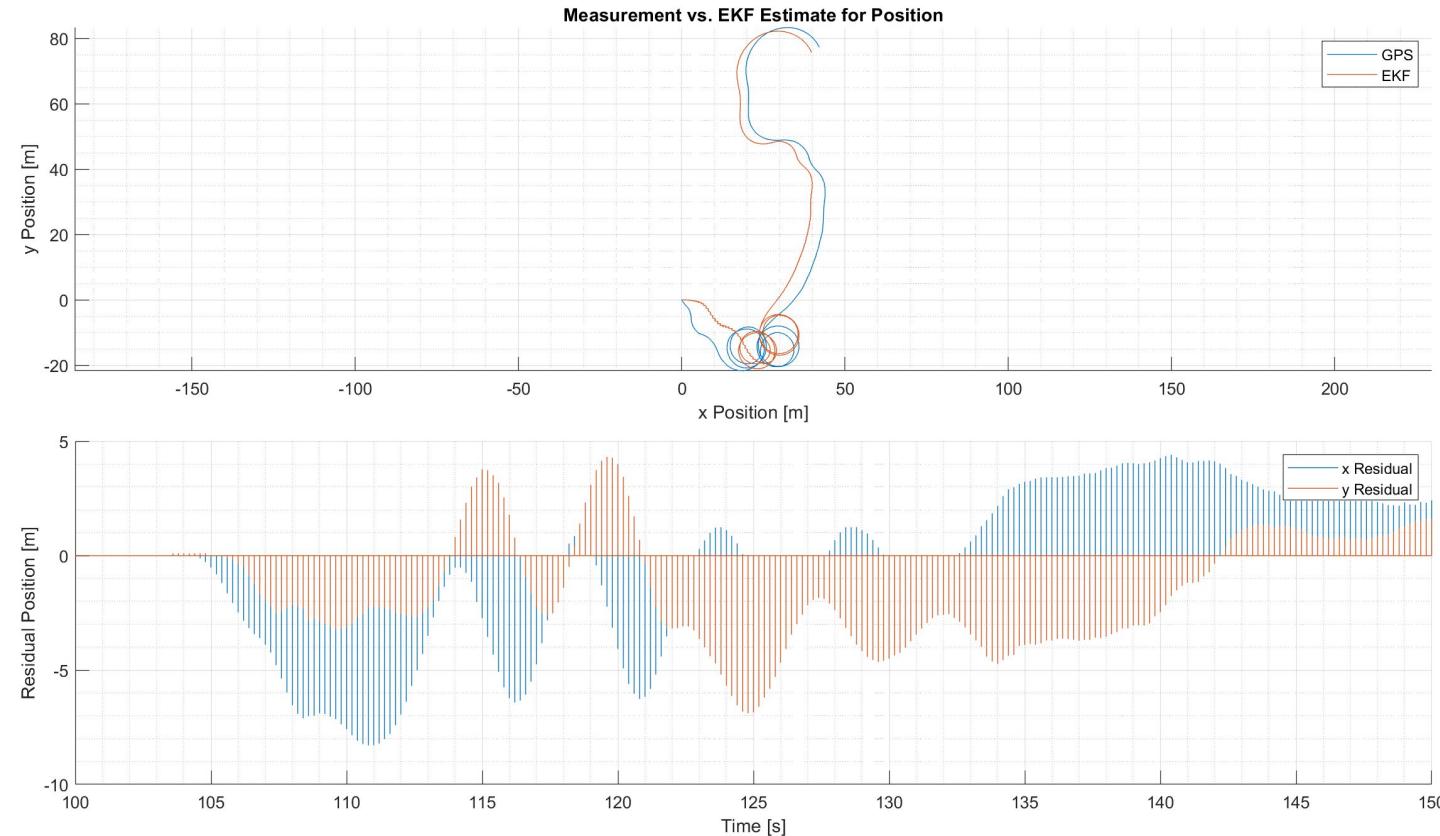
eSleek20

# State Estimation

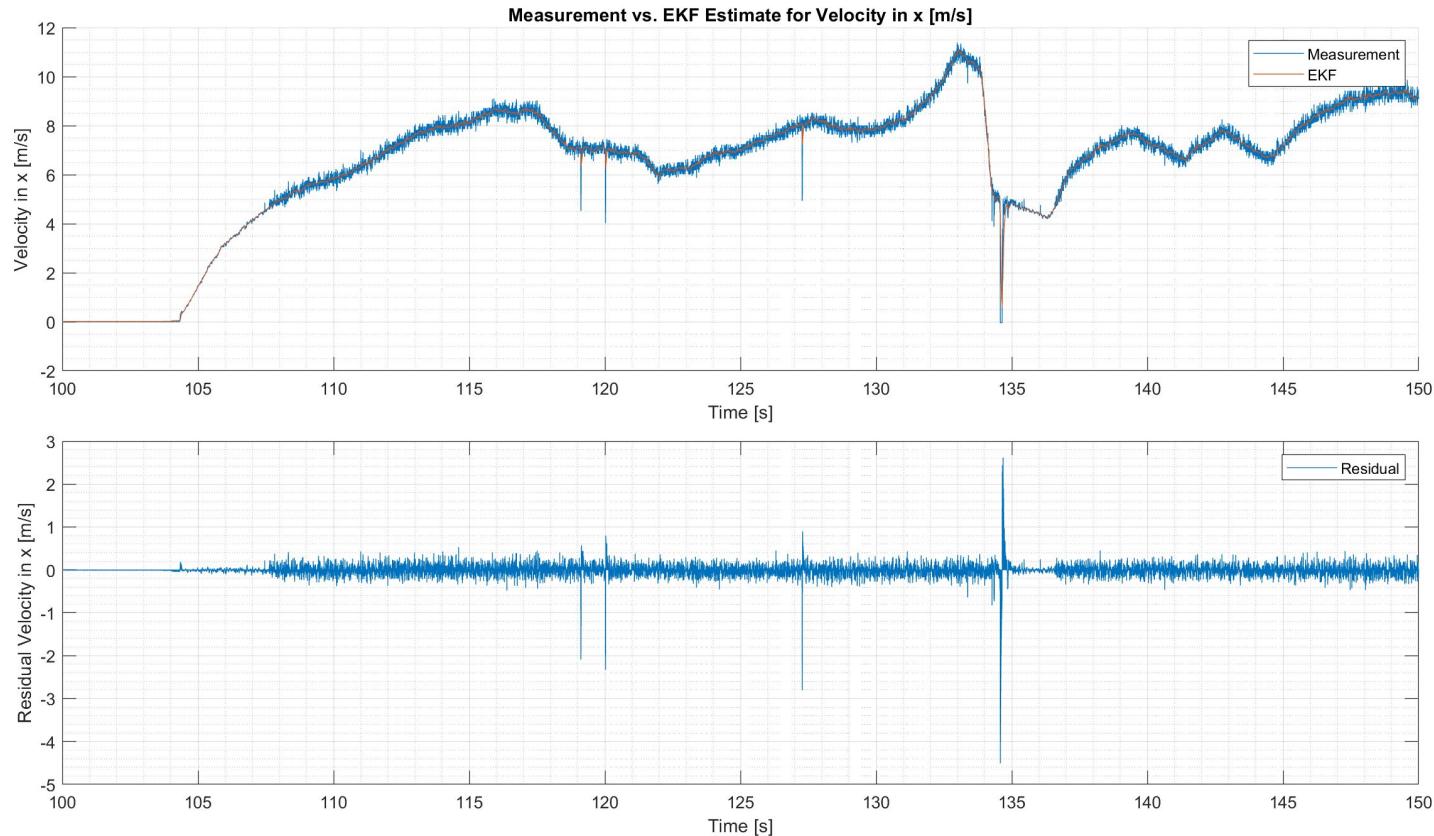
# Done

- Replaced parameter script with data dictionaries for whole VDC
- Added transformation from GPS to track coordinates
- Created Extended Kalman Filter (EKF)
  - Find jacobians and derivatives
  - Implement EKF equations
  - Integrate into state estimation

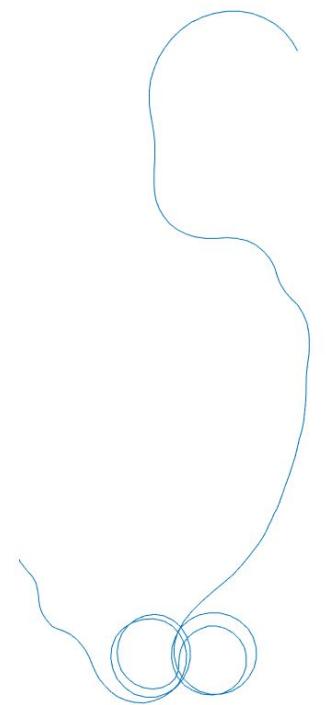
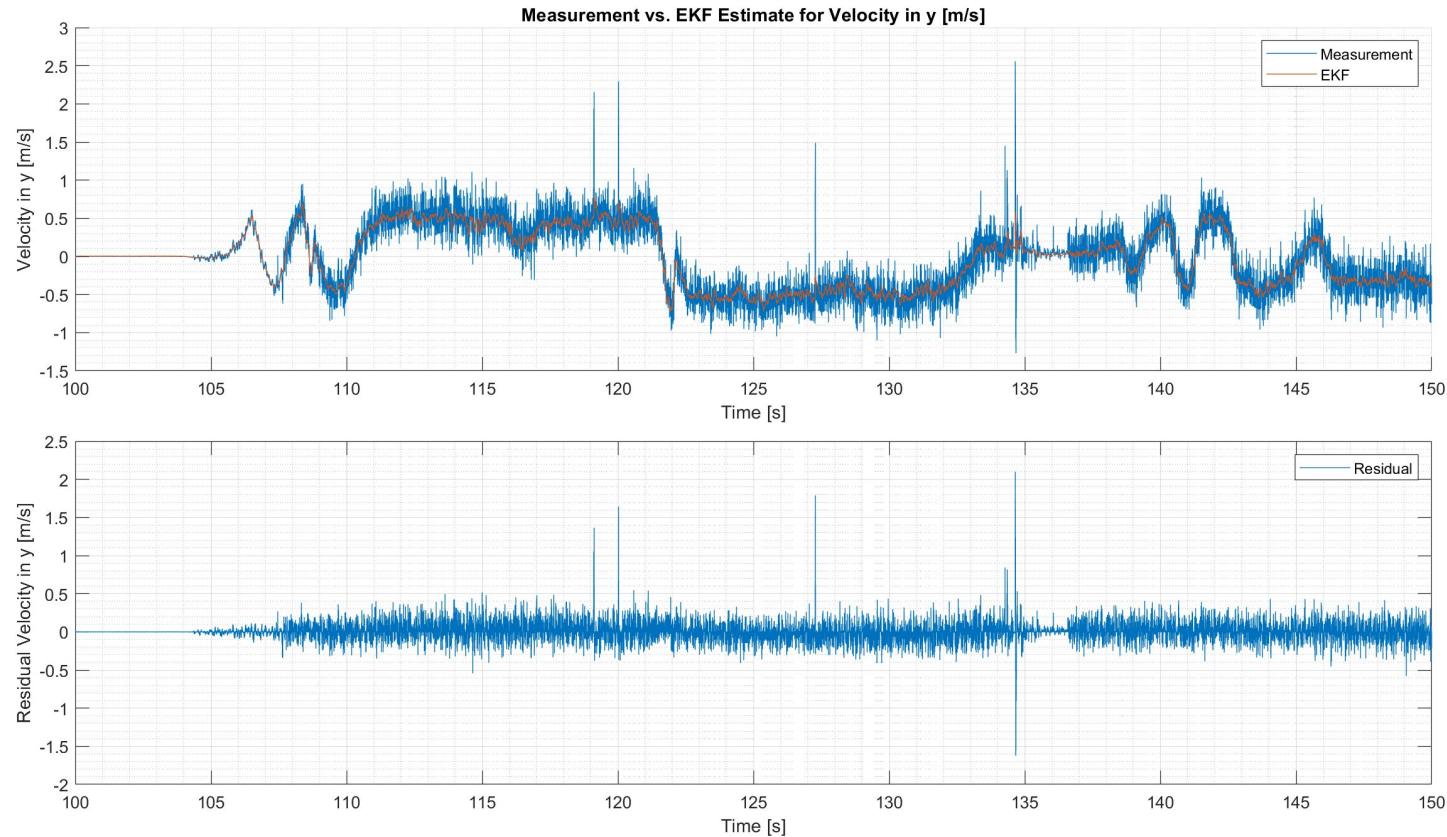
# EKF Position



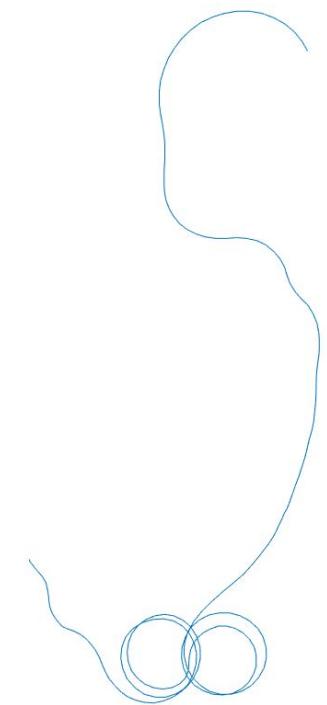
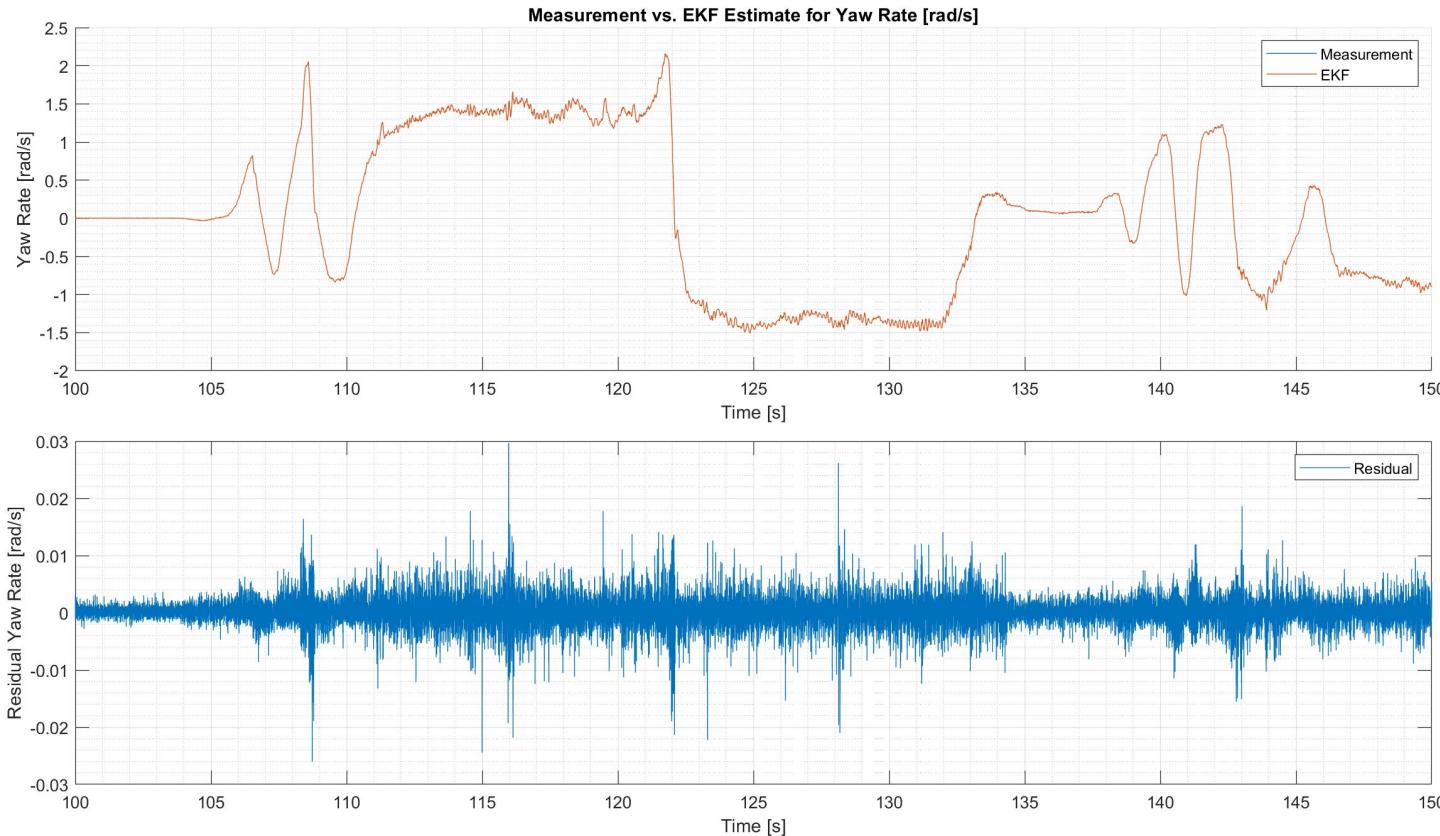
# EKF Velocity in x



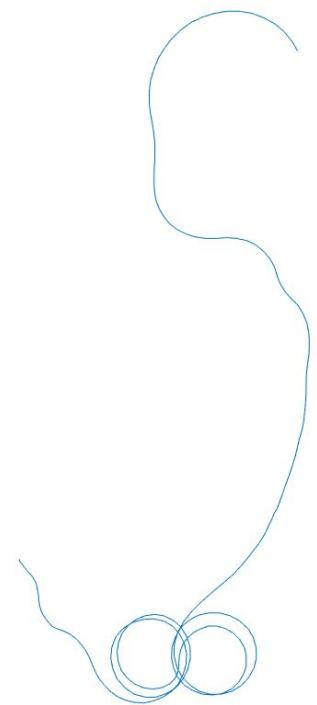
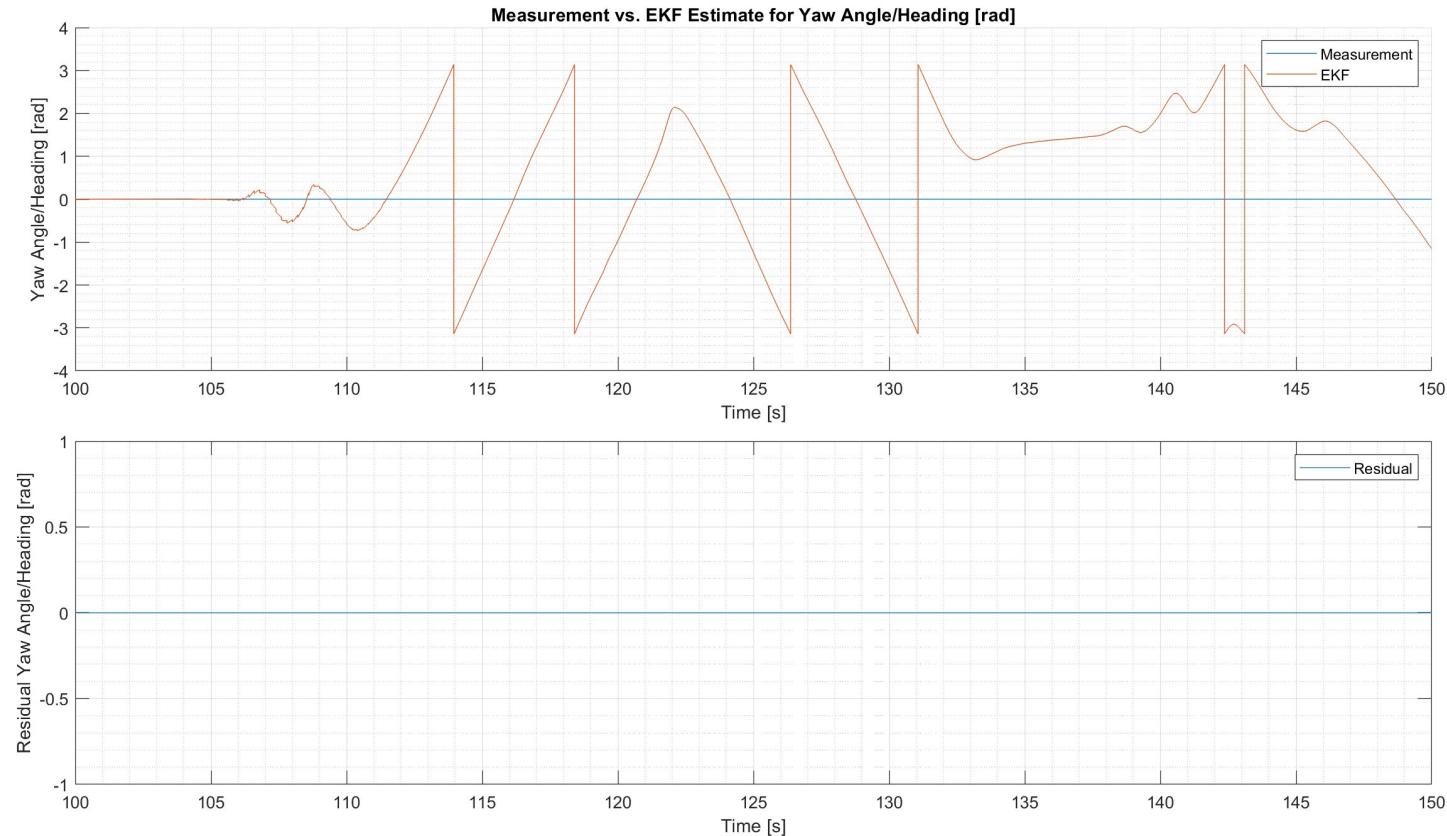
# EKF Velocity in y



# EKF Yaw Rate



# EKF Heading



# Next steps

- Design and implement outlier detection
  - Plausibility check
  - Kalman Filter Bank
- Enhance input and output selection with outlier detection results
- Enable second velocity measurement for EKF
  - Requires delay compensation for GPS

# Schedule

Aktuelle KW:	9			Januar	Februar	März	April															
KW/ Bauteil, Verantwortlich	Status [%]	Dead- line	Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>State Estimation (Dominik)</b>																						
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	50																					
Kalman Filter-Block inkl. Fahrzeugmodell	90																					
Outlier Detection Block	0																					
Wheelspeed-based Velocity verbessern (optional)	0																					
Applikation EV + DV	0																					
Studienarbeit	0																					