

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.28559417445833246, median 0.2612281744379814, std: 0.16675211547768903
Reprojection error (cam1): mean 0.3108216361373731, median 0.28304275751715297, std: 0.18283627682984796
Gyroscope error (imu0): mean 0.39965996198635667, median 0.33157976875268247, std: 0.27306932898544095
Accelerometer error (imu0): mean 0.33477198352711474, median 0.25286265725954554, std: 0.29725145145047105

Residuals

Reprojection error (cam0) [px]: mean 0.28559417445833246, median 0.2612281744379814, std: 0.16675211547768903
Reprojection error (cam1) [px]: mean 0.3108216361373731, median 0.28304275751715297, std: 0.18283627682984796
Gyroscope error (imu0) [rad/s]: mean 0.008783009256945983, median 0.00728686497365537, std: 0.006001027554391426
Accelerometer error (imu0) [m/s^2]: mean 0.048499943419878754, median 0.036633365913354116, std: 0.04306417288846099

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[-0.00206285  0.99984911 -0.01724799  0.07086941]
 [ 0.99999786  0.00206044 -0.00015772  0.00511254]
 [-0.00012216 -0.01724828 -0.99985123 -0.00451523]
 [ 0.          0.          0.          1.        ]]
```

T_ic: (cam0 to imu0):

```
[[-0.00206285  0.99999786 -0.00012216 -0.00496688]
 [ 0.99984911  0.00206044 -0.01724828 -0.07094713]
 [-0.01724799 -0.00015772 -0.99985123 -0.0032914 ]
 [ 0.          0.          0.          1.        ]]
```

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
-0.012353918753714306

Transformation (cam1):

T_ci: (imu0 to cam1):
[[-0.00746091 0.99995079 -0.00653833 -0.00443783]
[0.99996403 0.00743431 -0.00408369 0.00524493]
[-0.00403488 -0.00656857 -0.99997029 -0.00432649]
[0. 0. 1.]]

T_ic: (cam1 to imu0):
[[-0.00746091 0.99996403 -0.00403488 -0.00529531]
[0.99995079 0.00743431 -0.00656857 0.0043702]
[-0.00653833 -0.00408369 -0.99997029 -0.00433396]
[0. 0. 1.]]

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
-0.012555330046530056

Baselines:

Baseline (cam0 to cam1):
[[0.99992808 -0.00539953 -0.01070916 -0.07532289]
[0.00544084 0.99997785 0.00383269 -0.00023578]
[0.01068823 -0.00389069 0.99993531 -0.00054913]
[0. 0. 1.]]
baseline norm: 0.07532525895886506 [m]

Gravity vector in target coords: [m/s^2]
[-9.71467369 -0.08230116 -1.33669911]

Calibration configuration

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cam0

Camera model: pinhole
Focal length: [568.758493707557, 568.0898833961045]
Principal point: [633.8144842785725, 346.30987409946977]
Distortion model: equidistant
Distortion coefficients: [0.024797346405976157, -0.06685379106623551, 0.07272744476764836, -0.0242044946199227]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.0294 [m]
Spacing 0.00882 [m]

cam1

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Camera model: pinhole
Focal length: [570.0854161194229, 569.2691971307967]
Principal point: [633.0348093652003, 324.4034604831896]
Distortion model: equidistant
Distortion coefficients: [-0.004842929678861597, 0.012593680458283641, -0.007138514180736794, 0.0027420897794787594]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.0294 [m]
Spacing 0.00882 [m]

IMU configuration

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IMU0:

Model: calibrated
Update rate: 200

Accelerometer:

Noise density: 0.010244178296533723

Noise density (discrete): 0.144874558823261

Random walk: 0.004161810308932516

Gyroscope:

Noise density: 0.001553952358385786

Noise density (discrete): 0.02197620500510835

Random walk: 2.501600029485788e-06

T_ib (imu0 to imu0)

[[1. 0. 0. 0.]

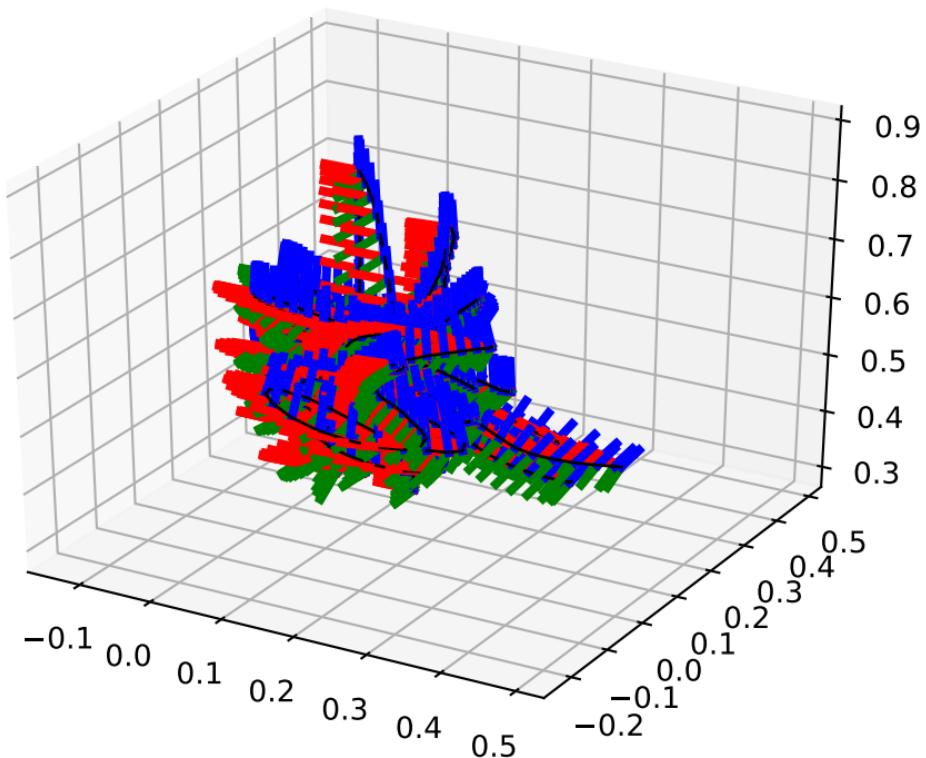
[0. 1. 0. 0.]

[0. 0. 1. 0.]

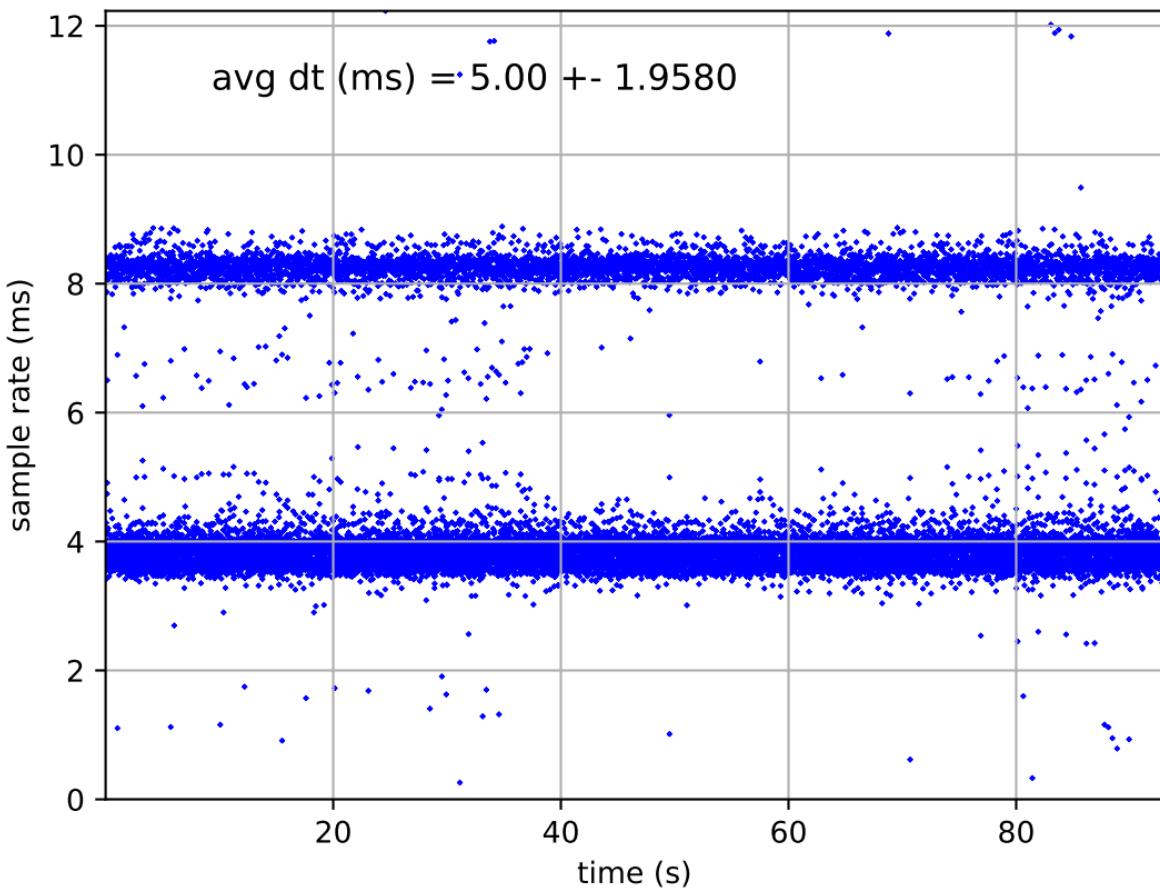
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

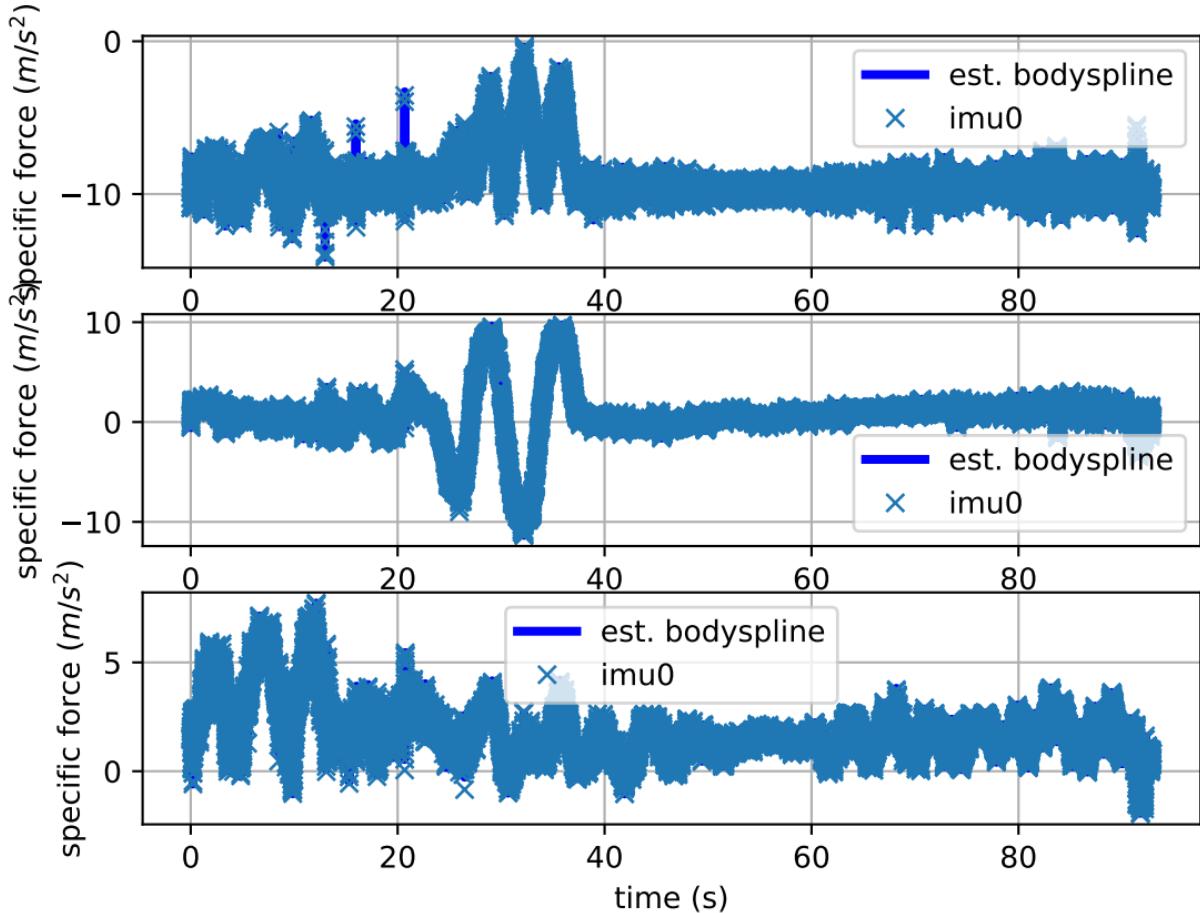
imu0: estimated poses



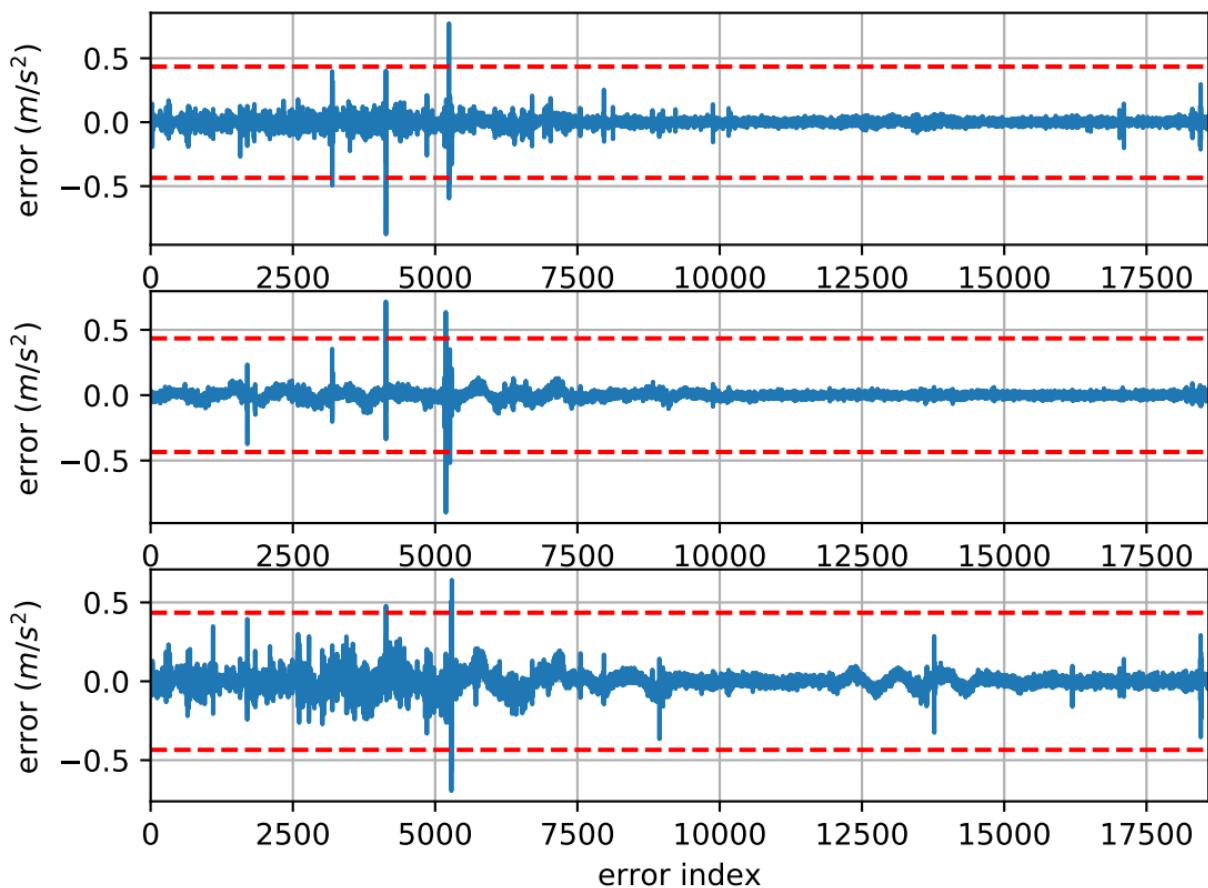
imu0: sample inertial rate



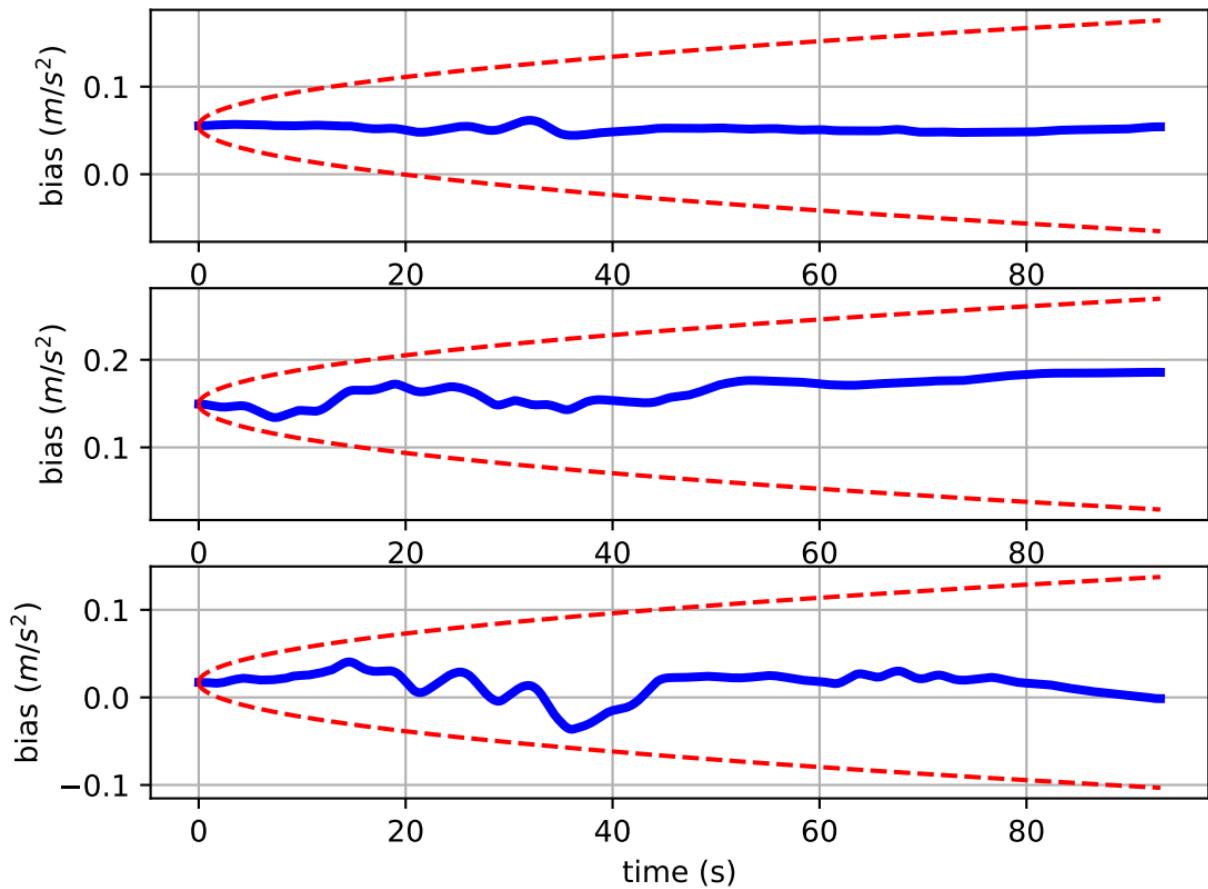
Comparison of predicted and measured specific force (imu0 frame)



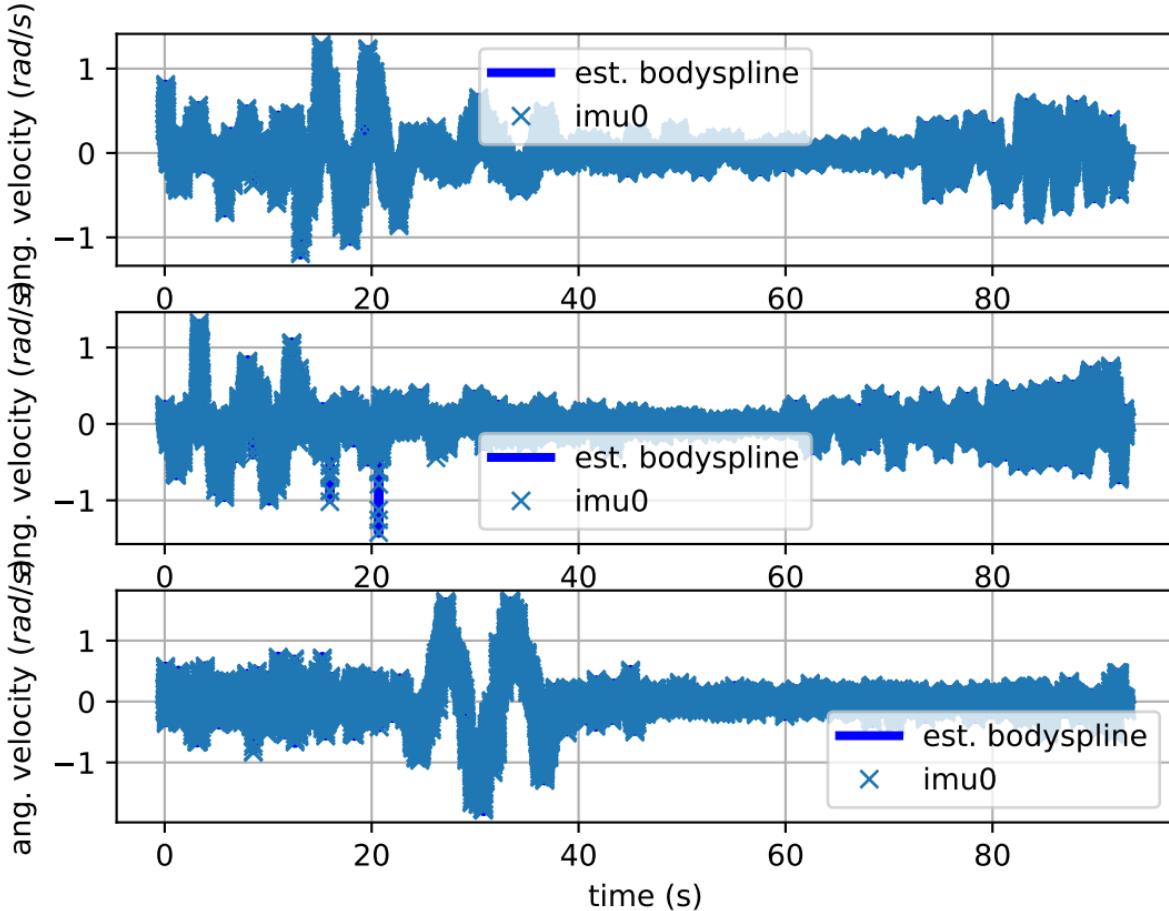
imu0: acceleration error



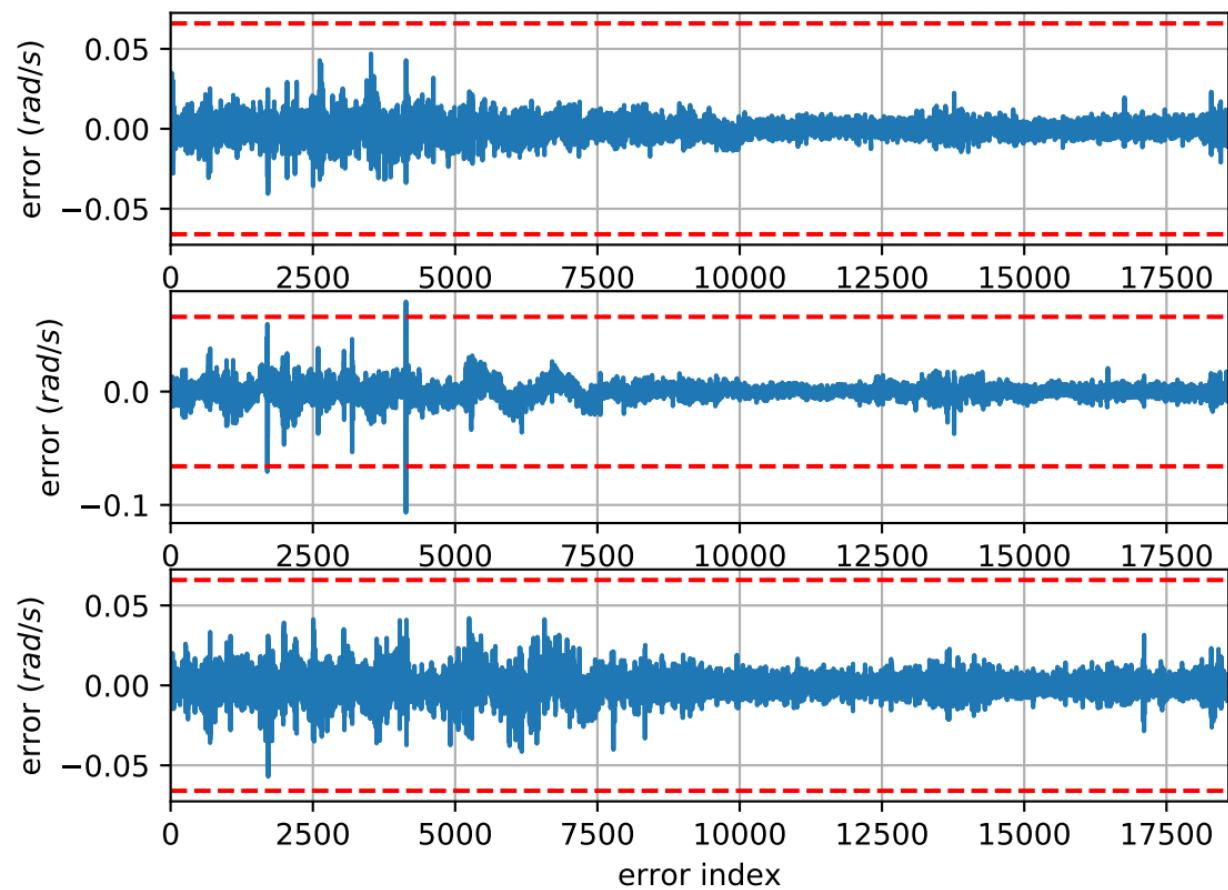
imu0: estimated accelerometer bias (imu frame)



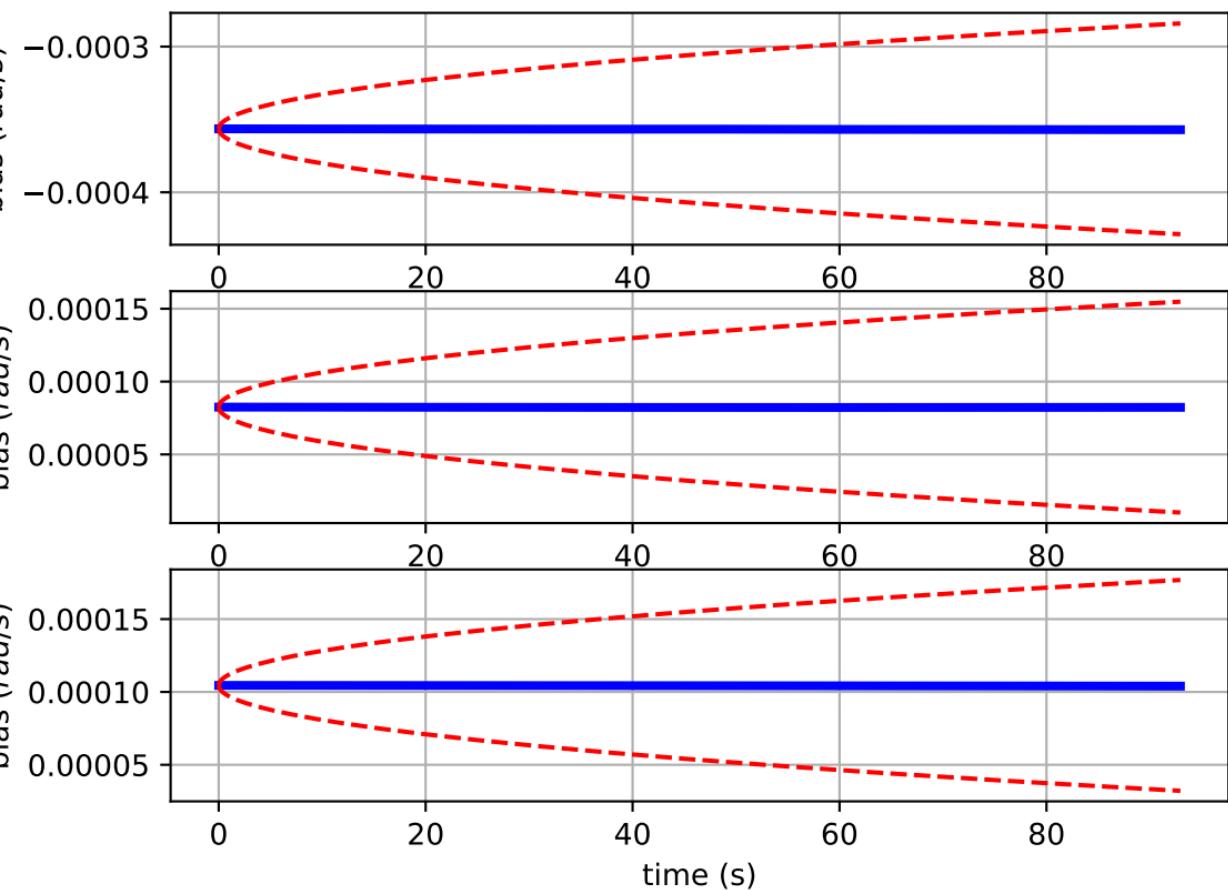
Comparison of predicted and measured angular velocities (body frame)



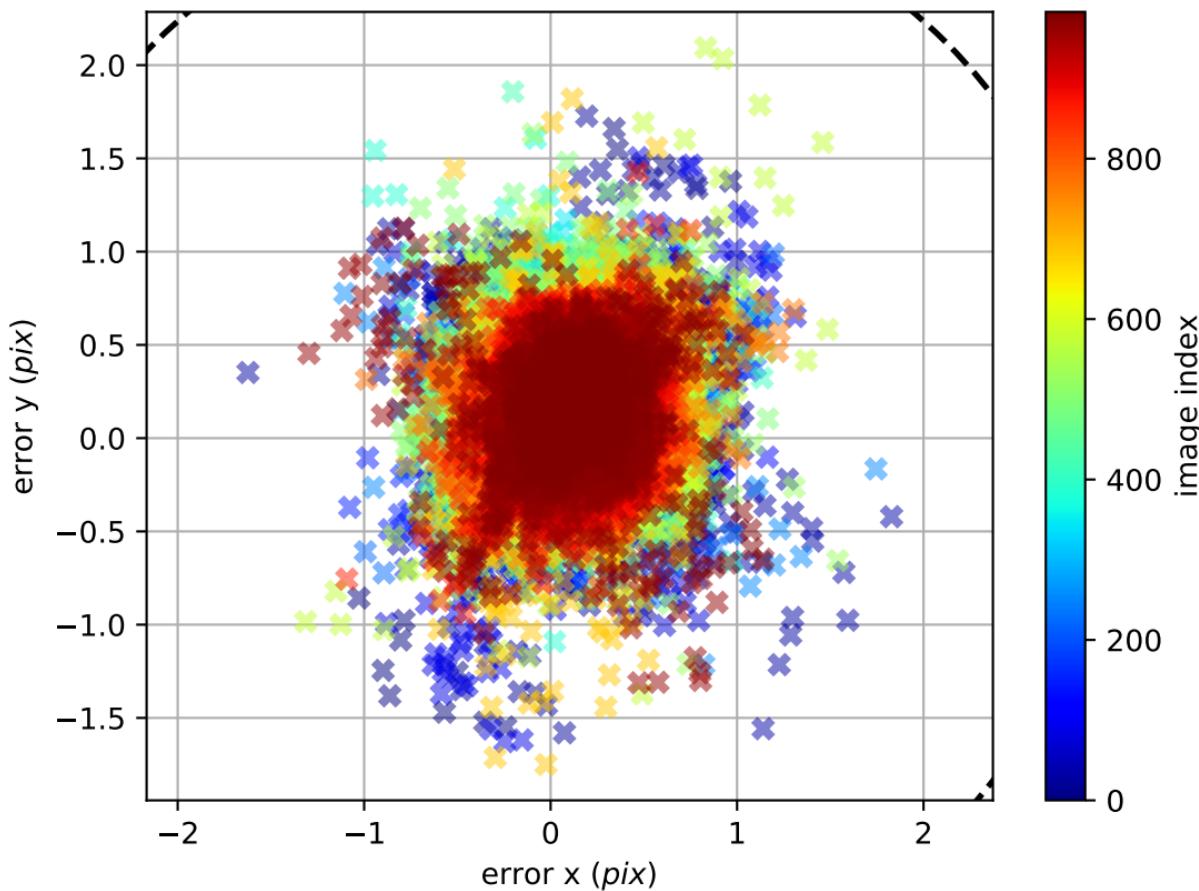
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

