

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.2301622118277186, median 0.193120973485615, std: 0.1724849602467477
Reprojection error (cam1): mean 0.2325227275983131, median 0.19326569619008793, std: 0.17744198244199375
Gyroscope error (imu0): mean 0.2368195287259808, median 0.11812285127579654, std: 0.34213953699179983
Accelerometer error (imu0): mean 0.17668008324651627, median 0.038333378354336846, std: 0.35676439657945314

Residuals

Reprojection error (cam0) [px]: mean 0.2301622118277186, median 0.193120973485615, std: 0.1724849602467477
Reprojection error (cam1) [px]: mean 0.2325227275983131, median 0.19326569619008793, std: 0.17744198244199375
Gyroscope error (imu0) [rad/s]: mean 0.0002893295228303925, median 0.00014431423108917887, std: 0.00041800213652899156
Accelerometer error (imu0) [m/s²]: mean 0.002802146120289748, median 0.0006079673806997823, std: 0.005658283329750126

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ 0.9999716  0.00753608  0.00003797  0.01086515]
 [ 0.00753594 -0.99996746  0.00287762 -0.00000692]
 [ 0.00005966 -0.00287725 -0.99999586 -0.00923335]
 [ 0.      0.      0.      1.      ]]
```

T_ic: (cam0 to imu0):

```
[[ 0.9999716  0.00753594  0.00005966 -0.01086424]
 [ 0.00753608 -0.99996746 -0.00287725 -0.00011537]
 [ 0.00003797  0.00287762 -0.99999586 -0.00923371]
 [ 0.      0.      0.      1.      ]]
```

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

0.01028381753919678

Transformation (cam1):

T_ci: (imu0 to cam1):
[[0.99977445 0.00216388 0.02112721 -0.06397923]
 [0.00231309 -0.99997254 -0.00704044 -0.00021013]
 [0.02111114 0.00708772 -0.99975201 -0.00928719]
 [0. 0. 0. 1.]]

T_ic: (cam1 to imu0):
[[0.99977445 0.00231309 0.02111114 0.06416135]
 [0.00216388 -0.99997254 0.00708772 -0.00000585]
 [0.02112721 -0.00704044 -0.99975201 -0.00793466]
 [0. 0. 0. 1.]]

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
0.010157301849536133

Baselines:

Baseline (cam0 to cam1):
[[0.99976317 0.00543123 -0.02107371 -0.07503635]
 [-0.00522312 0.99993718 0.00991772 -0.00005488]
 [0.02112625 -0.0098053 0.99972873 -0.00028595]
 [0. 0. 0. 1.]]

baseline norm: 0.07503691656339873 [m]

Gravity vector in target coords: [m/s^2]
[9.80579637 -0.00313152 0.12153488]

Calibration configuration

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cam0

Camera model: pinhole
Focal length: [454.0197736242923, 453.8473536093487]
Principal point: [328.79611945947175, 248.33311077152317]
Distortion model: radtan
Distortion coefficients: [0.016505831035777817, -0.012776480969926762, 0.0031973773556680535,
0.0004363594811094286]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.088 [m]
Spacing 0.026399999999999996 [m]

cam1

Camera model: pinhole
Focal length: [454.6029343586522, 454.60467575923786]
Principal point: [328.77040966412136, 244.93434878902355]
Distortion model: radtan
Distortion coefficients: [0.01791825434224609, -0.016760459290022168, 0.0014904938887851868,
0.001512018426513471]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.088 [m]
Spacing 0.026399999999999996 [m]

IMU configuration

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IMU0:

Model: calibrated
Update rate: 100.0

Accelerometer:

Noise density: 0.001586

Noise density (discrete): 0.01586

Random walk: 0.0002

Gyroscope:

Noise density: 0.000122173

Noise density (discrete): 0.0012217299999999999

Random walk: 4e-06

T_ib (imu0 to imu0)

[[1. 0. 0. 0.]

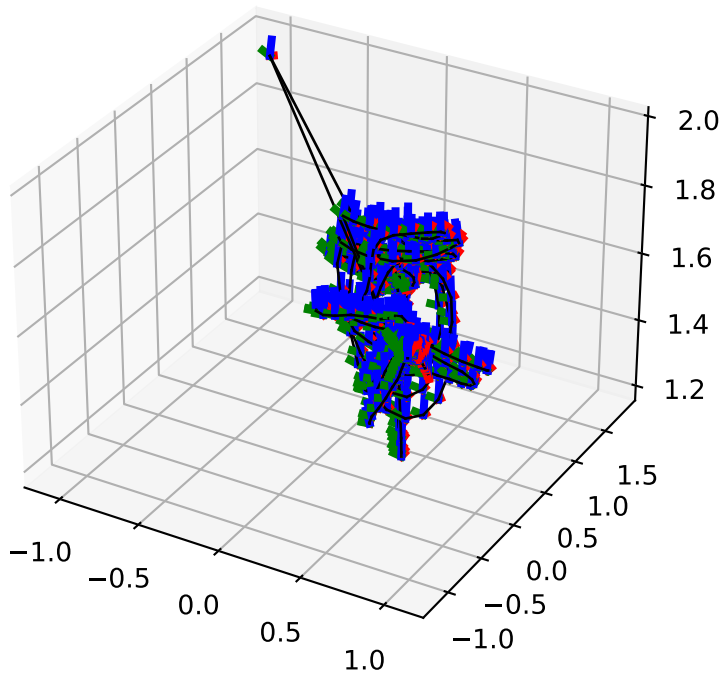
[0. 1. 0. 0.]

[0. 0. 1. 0.]

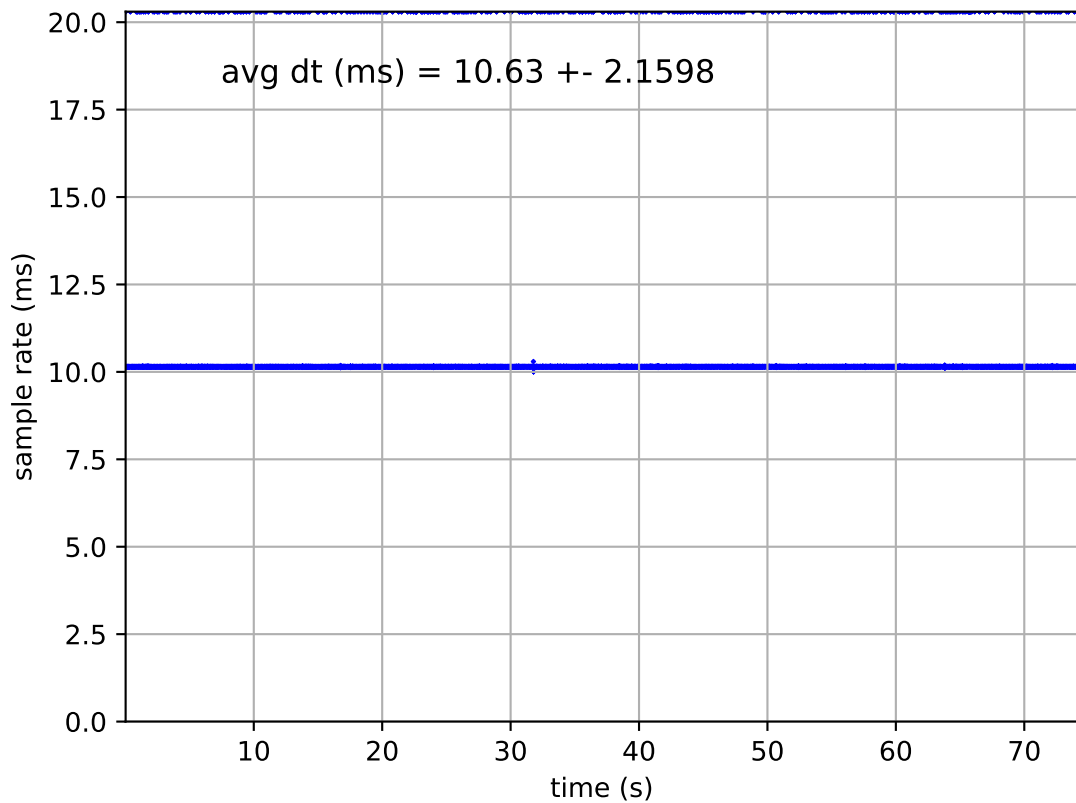
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

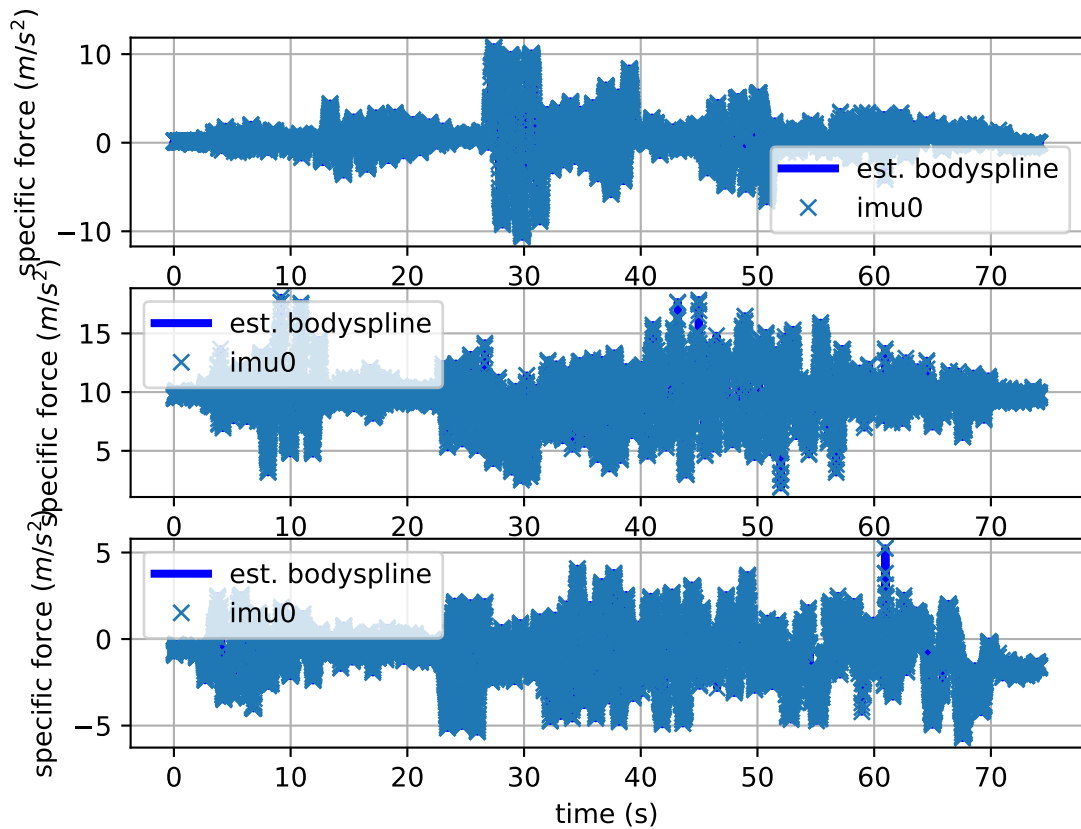
imu0: estimated poses



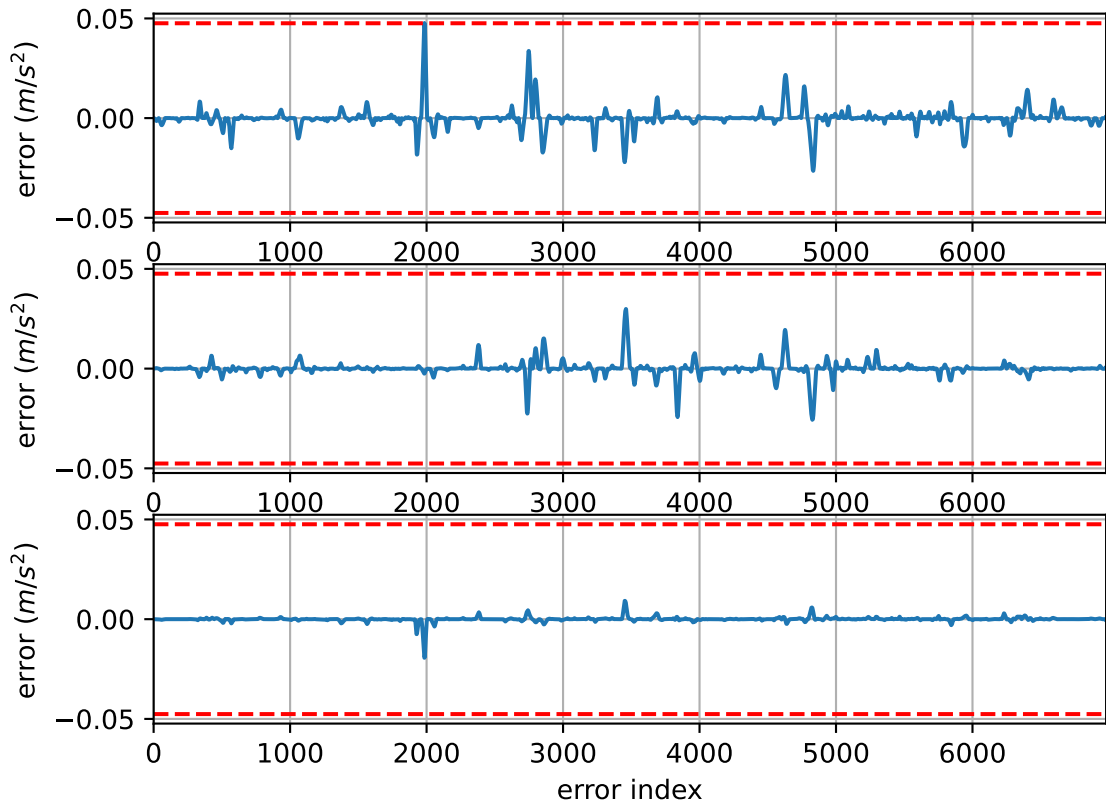
imu0: sample inertial rate



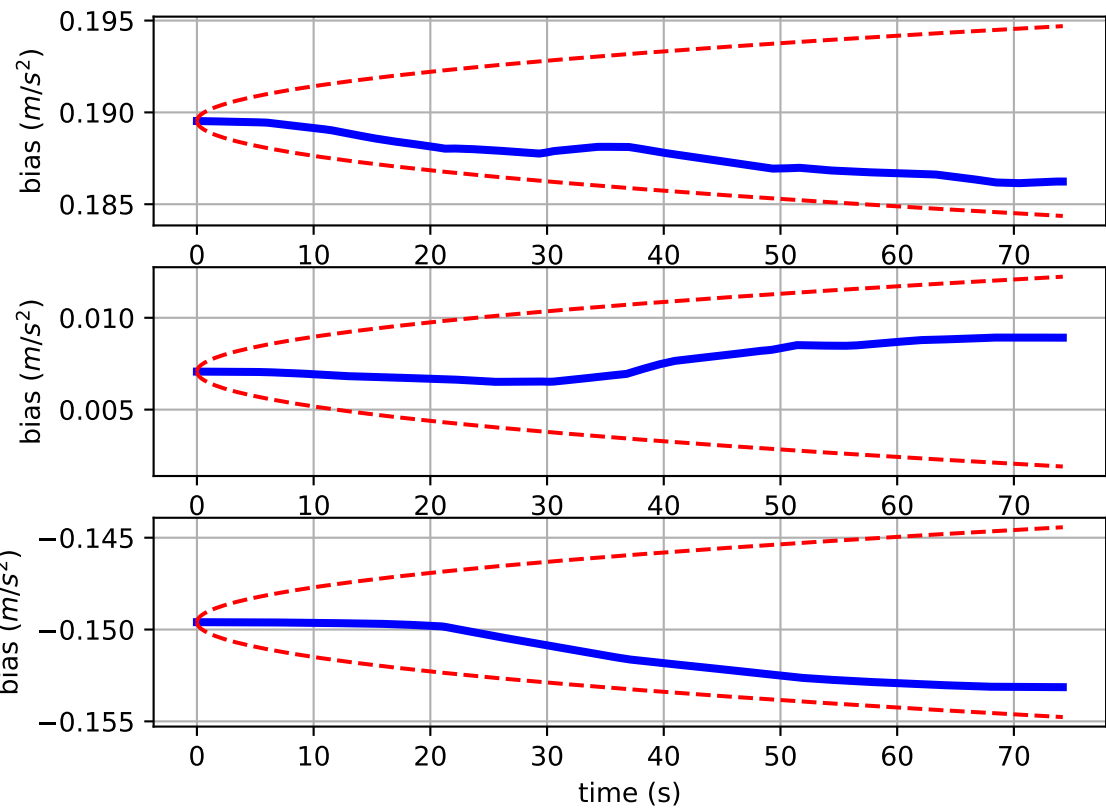
Comparison of predicted and measured specific force (imu0 frame)



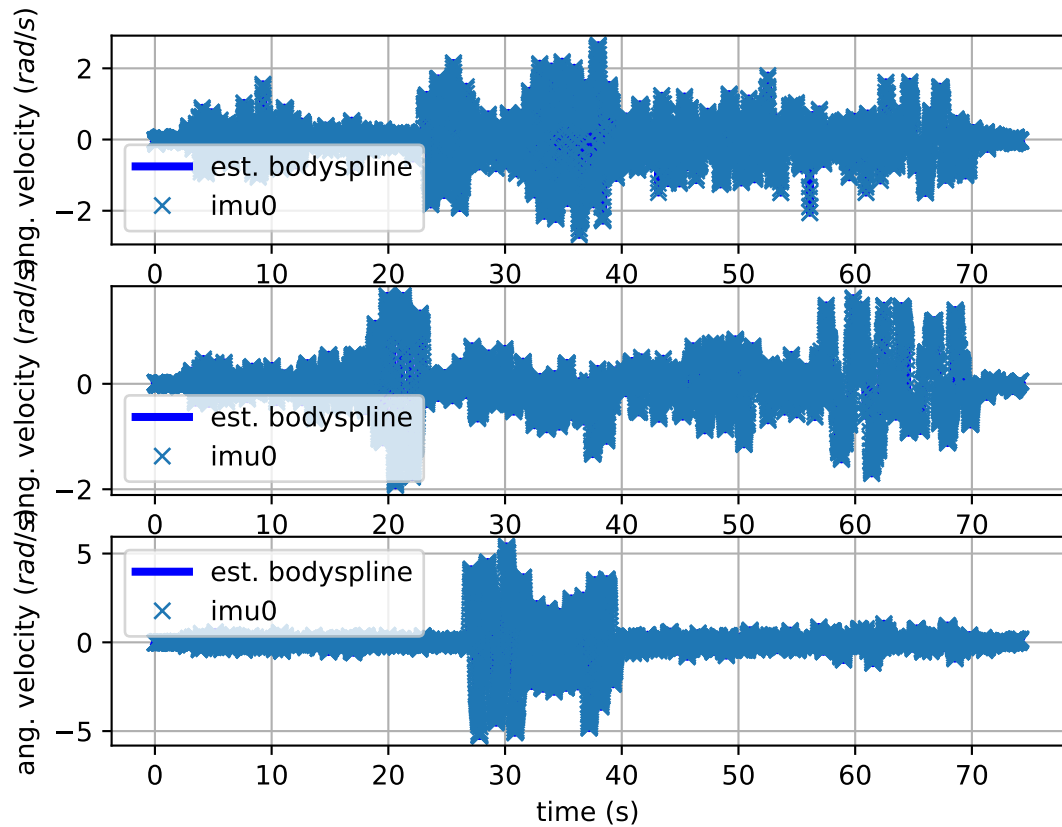
imu0: acceleration error



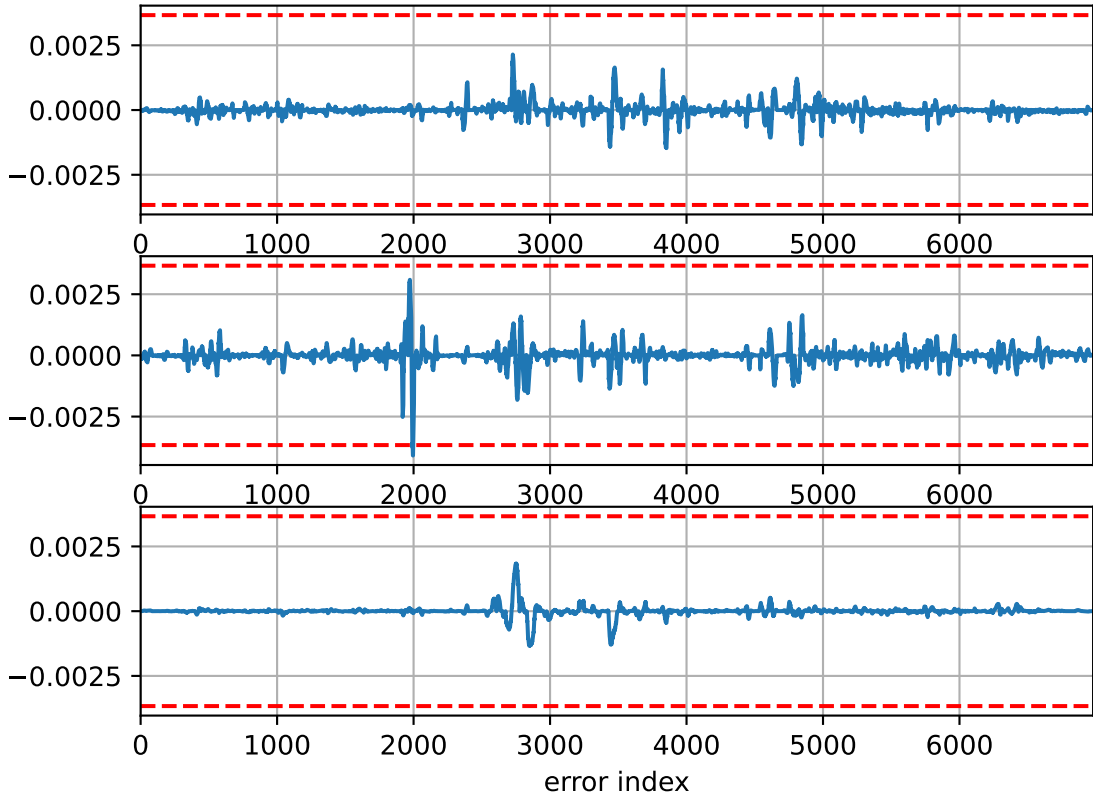
imu0: estimated accelerometer bias (imu frame)



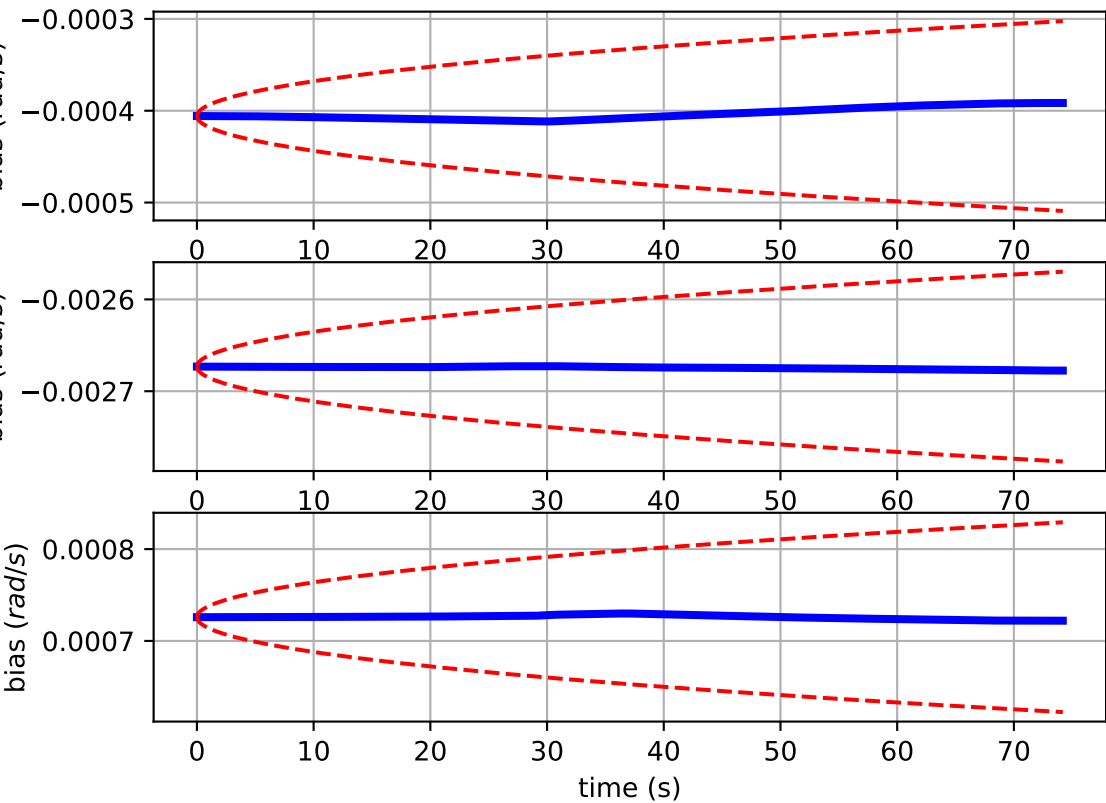
Comparison of predicted and measured angular velocities (body frame)



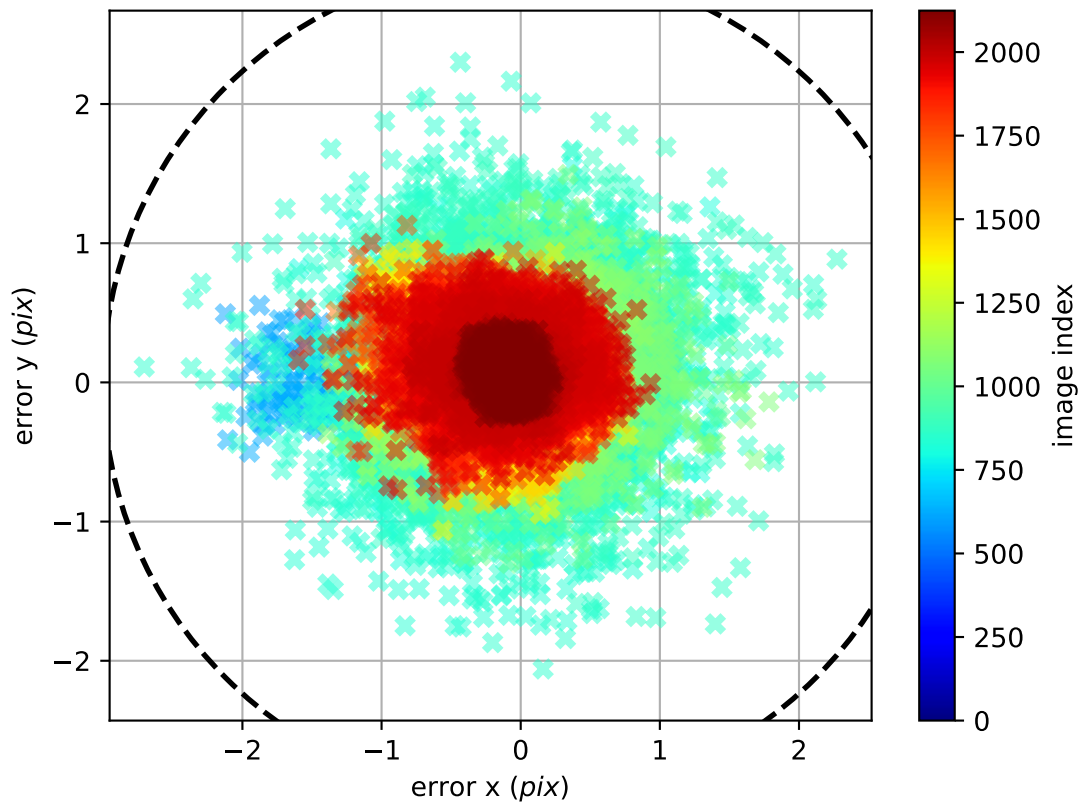
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

