

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.5983244285098182, median 0.39326190477133893, std: 0.6415293984829951

Reprojection error (cam1): mean 0.583130475144361, median 0.394150034590637, std: 0.6273503586490349

Gyroscope error (imu0): mean 0.4251335163643805, median 0.34588321301895675, std: 0.30648925716954745

Accelerometer error (imu0): mean 0.3427028369635006, median 0.2858959179765092, std: 0.23277463199220894

Residuals

Reprojection error (cam0) [px]: mean 0.5983244285098182, median 0.39326190477133893, std: 0.6415293984829951

Reprojection error (cam1) [px]: mean 0.583130475144361, median 0.394150034590637, std: 0.6273503586490349

Gyroscope error (imu0) [rad/s]: mean 0.012322807494136823, median 0.010025679193528843, std:

0.008883816424118953

Accelerometer error (imu0) [m/s^2]: mean 0.10004199515043434, median 0.0834588890280506, std:

0.06795169485973325

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[ 0.9999096 -0.01322817 -0.00240931  0.00524322]
 [ 0.01325417  0.99985037  0.01111636 -0.00647263]
 [ 0.0022619 -0.01114729  0.99993531 -0.01662044]
 [ 0.          0.          0.          1.        ]]
```

T_ic: (cam0 to imu0):

```
[[ 0.9999096  0.01325417  0.0022619 -0.00511936]
 [-0.01322817  0.99985037 -0.01114729  0.00635574]
 [-0.00240931  0.01111636  0.99993531  0.01670395]
 [ 0.          0.          0.          1.        ]]
```

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

0.003400241168496089

Transformation (cam1):

T_ci: (imu0 to cam1):
[[0.9997728 -0.01420289 0.01589442 -0.04491635]
[0.0140662 0.9998634 0.0086788 -0.00648267]
[-0.01601551 -0.00845325 0.99983601 -0.01636573]
[0. 0. 1.]]

T_ic: (cam1 to imu0):
[[0.9997728 0.0140662 -0.01601551 0.04473523]
[-0.01420289 0.9998634 -0.00845325 0.0057055]
[0.01589442 0.0086788 0.99983601 0.01713323]
[0. 0. 1.]]

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
0.0034230709776159026

Baselines:

Baseline (cam0 to cam1):
[[0.999832 -0.00077292 0.0183131 -0.04985933]
[0.00081766 0.9999967 -0.00243572 -0.00005484]
[-0.01831116 0.00245028 0.99982933 0.00036374]
[0. 0. 1.]]
baseline norm: 0.04986068264146947 [m]

Gravity vector in target coords: [m/s^2]
[0.2053098 -9.80264691 -0.18543024]

Calibration configuration

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cam0

Camera model: pinhole
Focal length: [382.16267862725243, 380.8712308422184]
Principal point: [327.2053997133069, 241.25522355942337]
Distortion model: radtan
Distortion coefficients: [0.03419681334888019, 0.022973718308438012, 0.00197394712612627,
0.0010216609371098192]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.0205 [m]
Spacing 0.00630006 [m]

cam1

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Camera model: pinhole
Focal length: [382.3097047771611, 381.06337025907686]
Principal point: [320.267501168262, 241.70101347358377]
Distortion model: radtan
Distortion coefficients: [0.03672014192136122, -0.001876272806743116, 0.002599782677664708,
0.0014812434184378494]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.0205 [m]
Spacing 0.00630006 [m]

IMU configuration

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IMU0:

Model: calibrated
Update rate: 200.0

Accelerometer:

Noise density: 0.02064189891192468

Noise density (discrete): 0.29192053394378314

Random walk: 0.0022919238444020808

Gyroscope:

Noise density: 0.002049600985797649

Noise density (discrete): 0.02898573511568301

Random walk: 3.199855545594742e-05

T_ib (imu0 to imu0)

[[1. 0. 0. 0.]

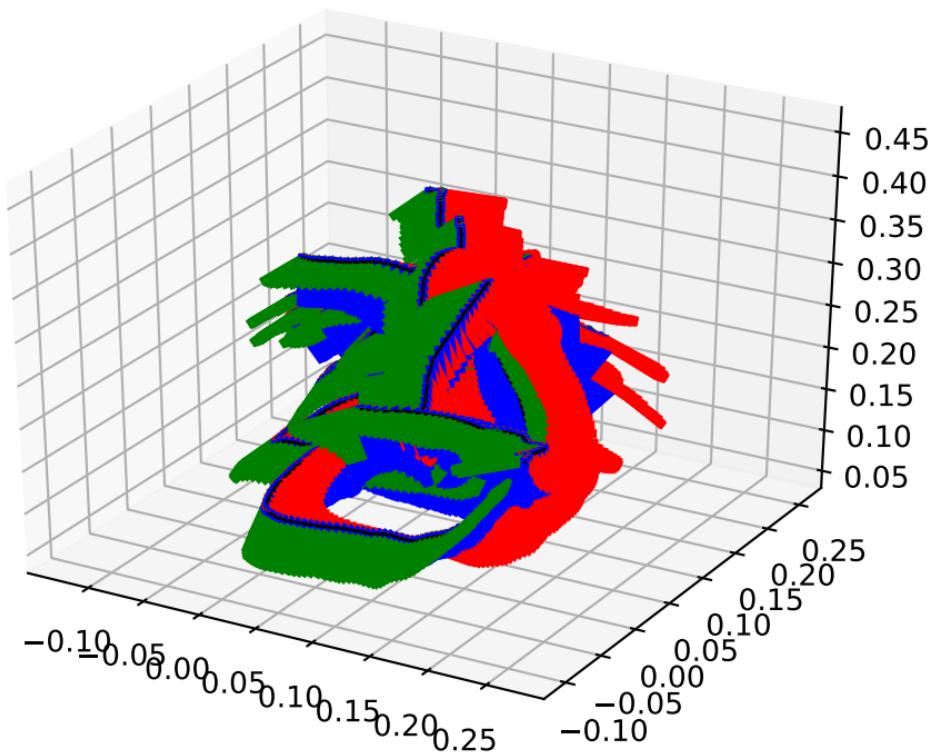
[0. 1. 0. 0.]

[0. 0. 1. 0.]

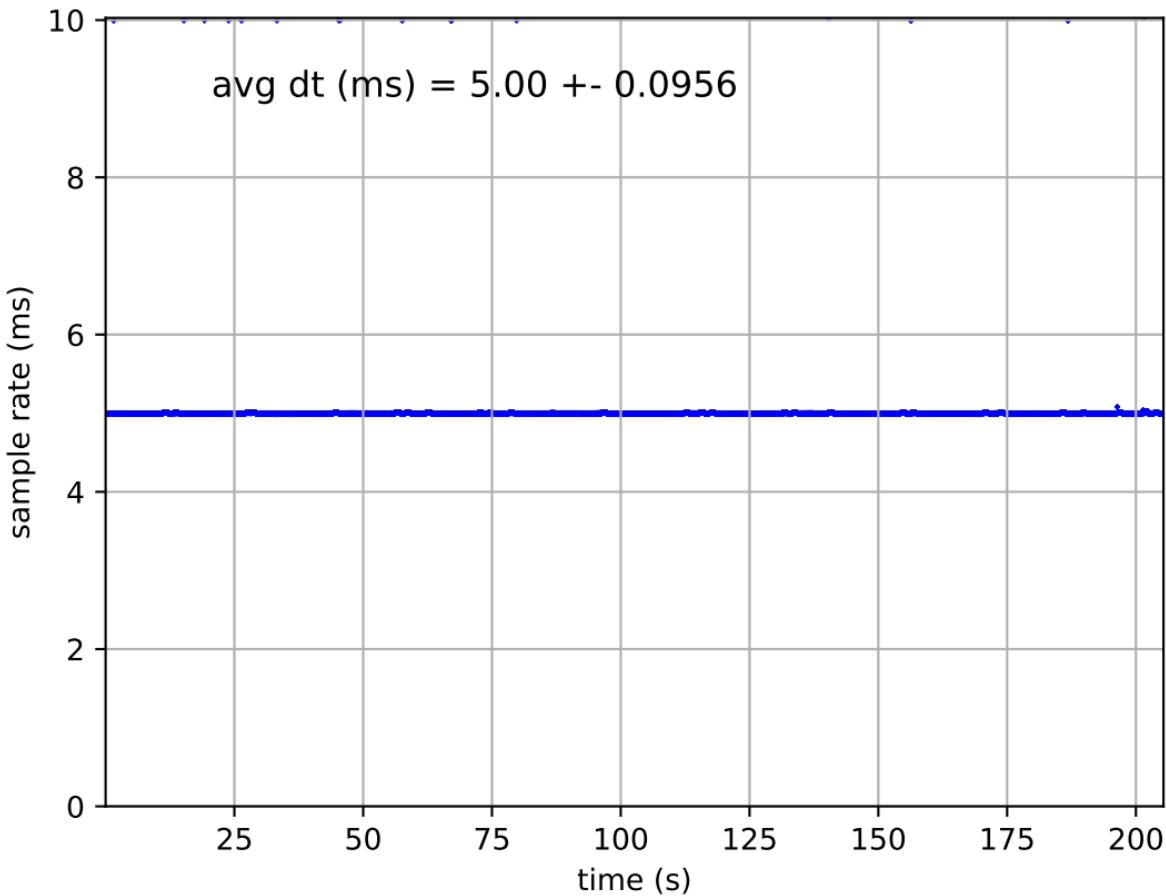
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

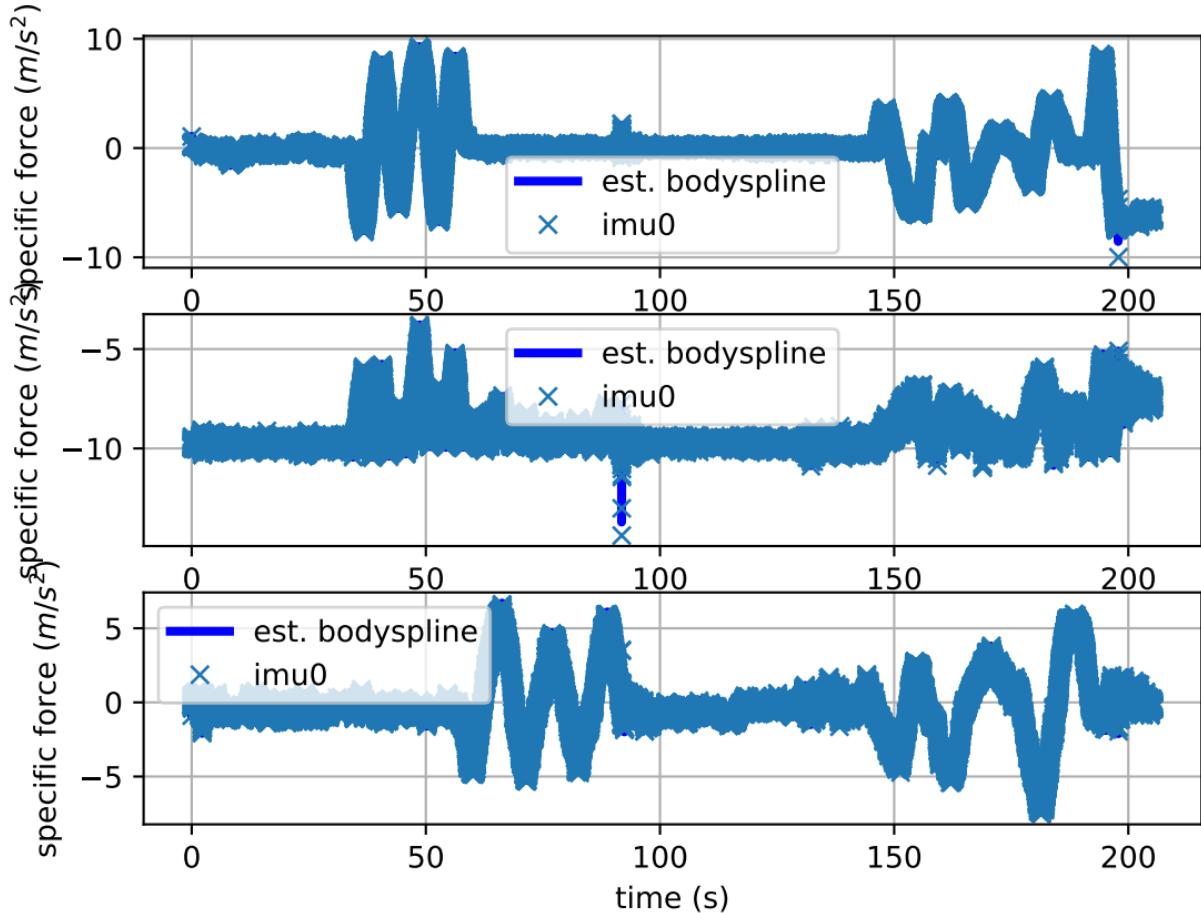
imu0: estimated poses



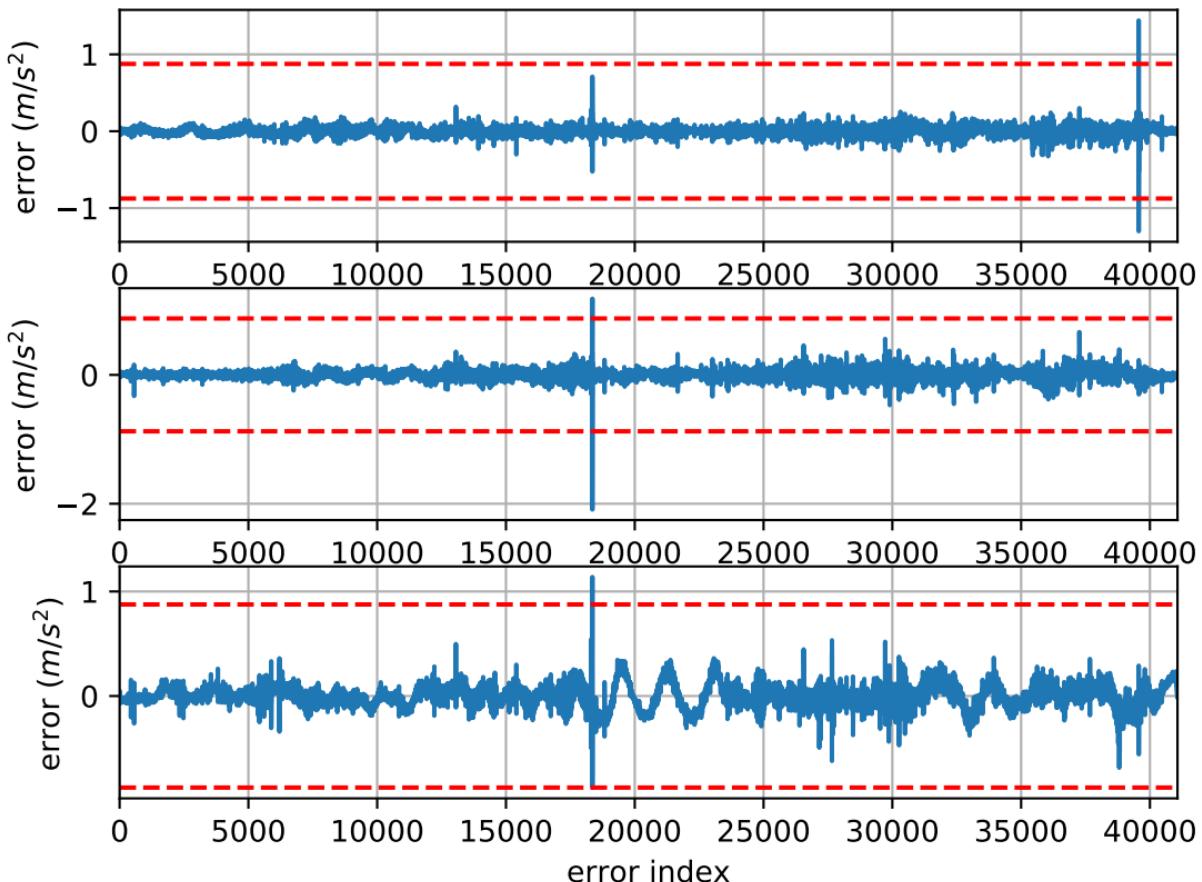
imu0: sample inertial rate



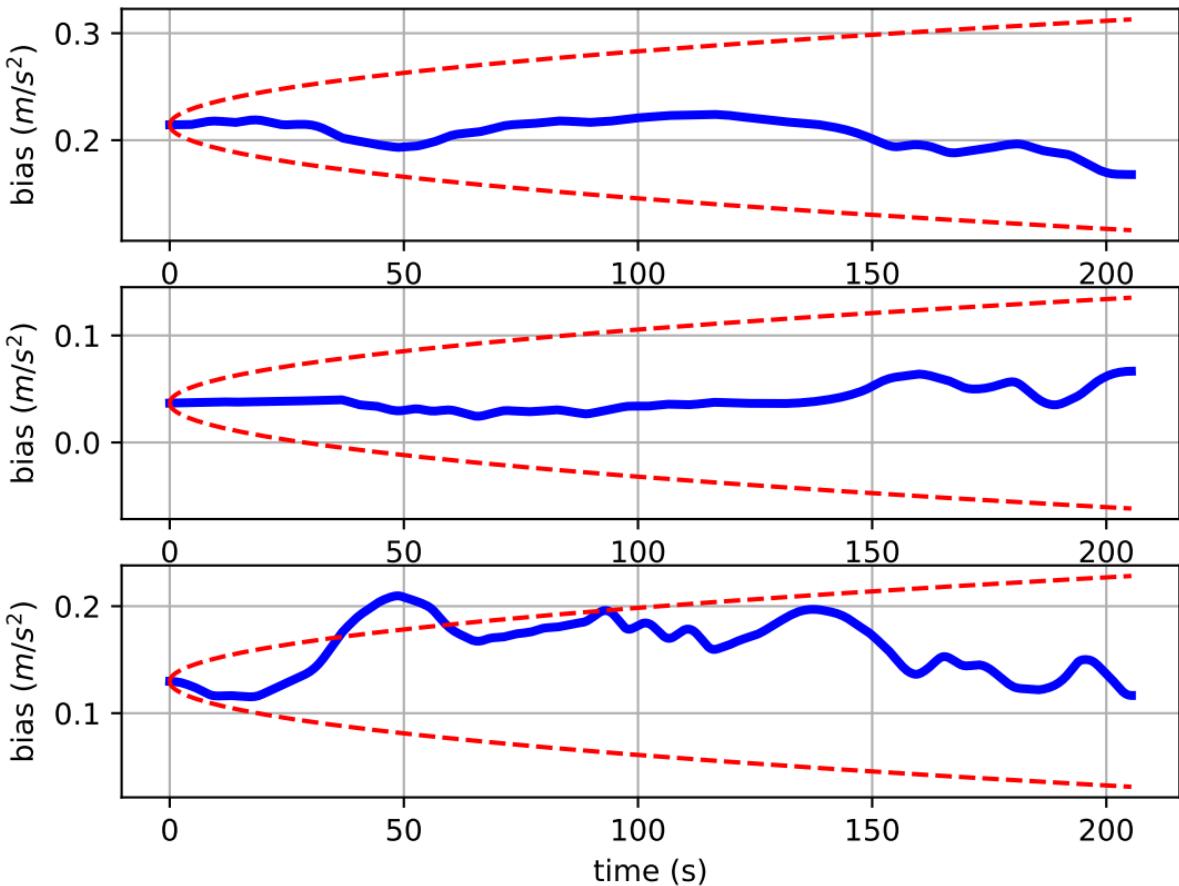
Comparison of predicted and measured specific force (imu0 frame)



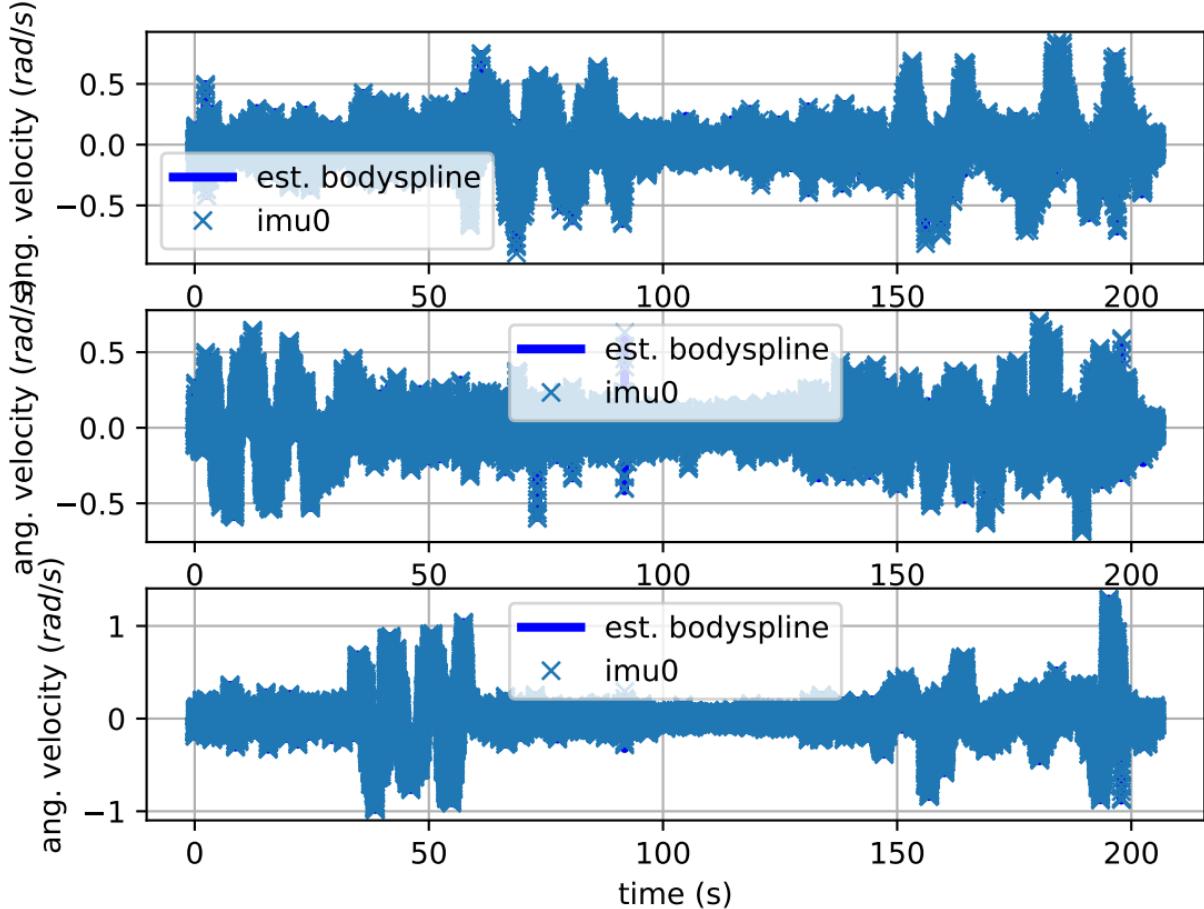
imu0: acceleration error



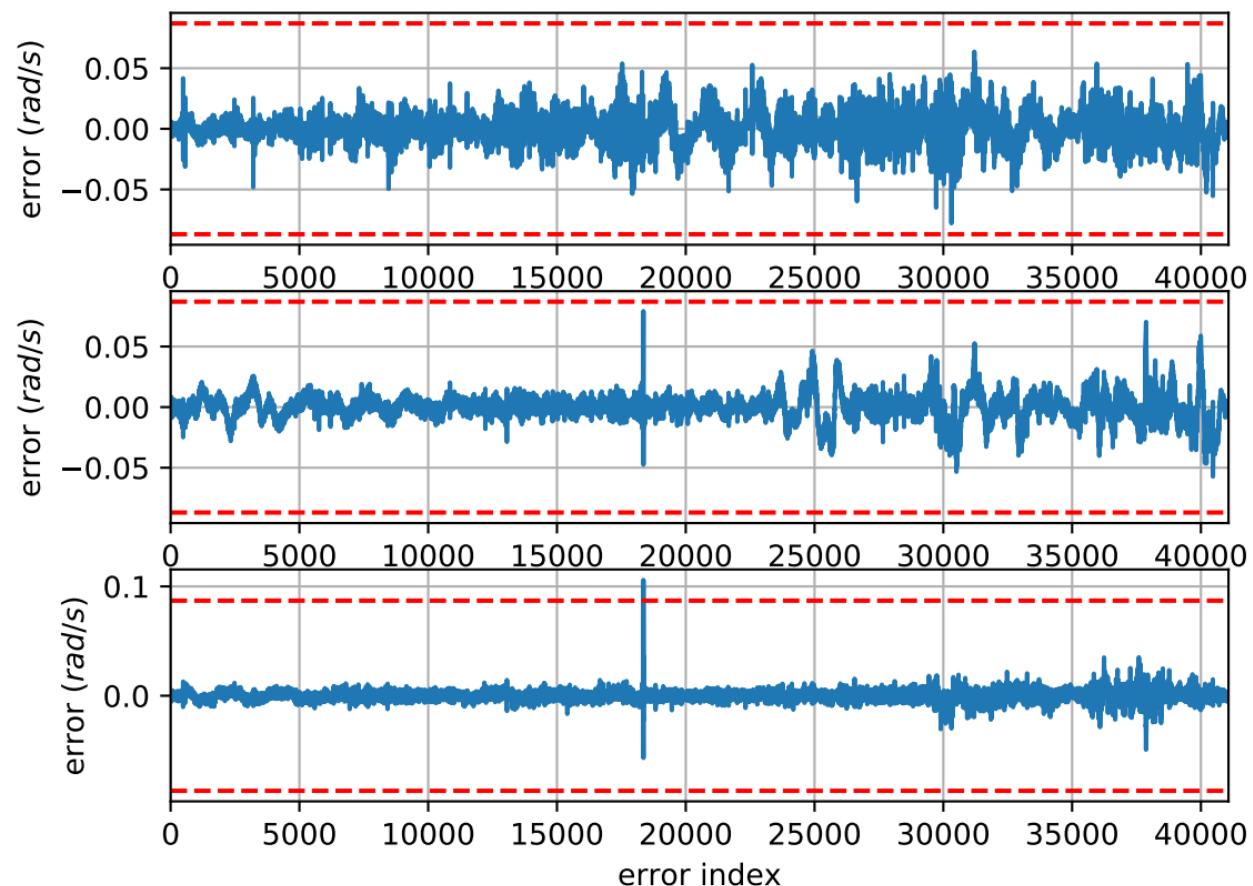
imu0: estimated accelerometer bias (imu frame)



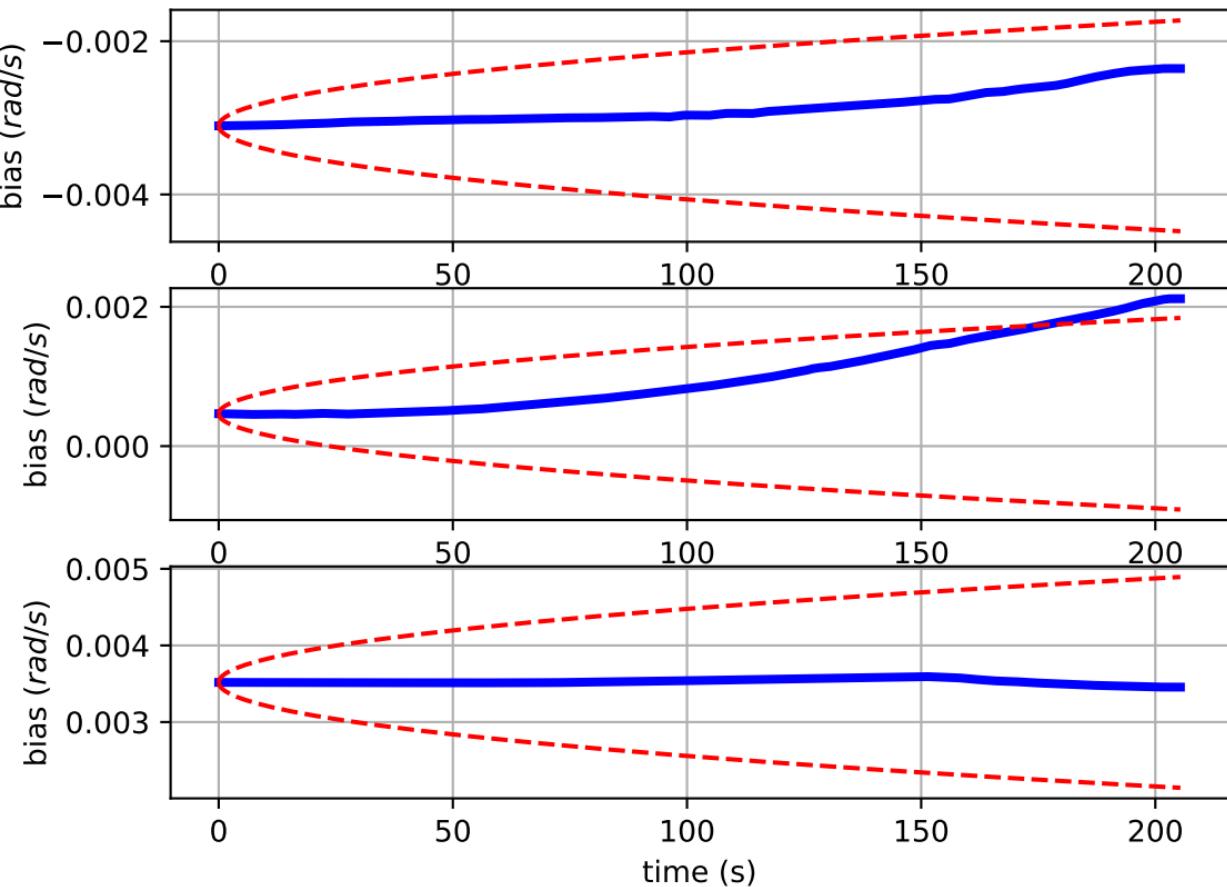
Comparison of predicted and measured angular velocities (body frame)



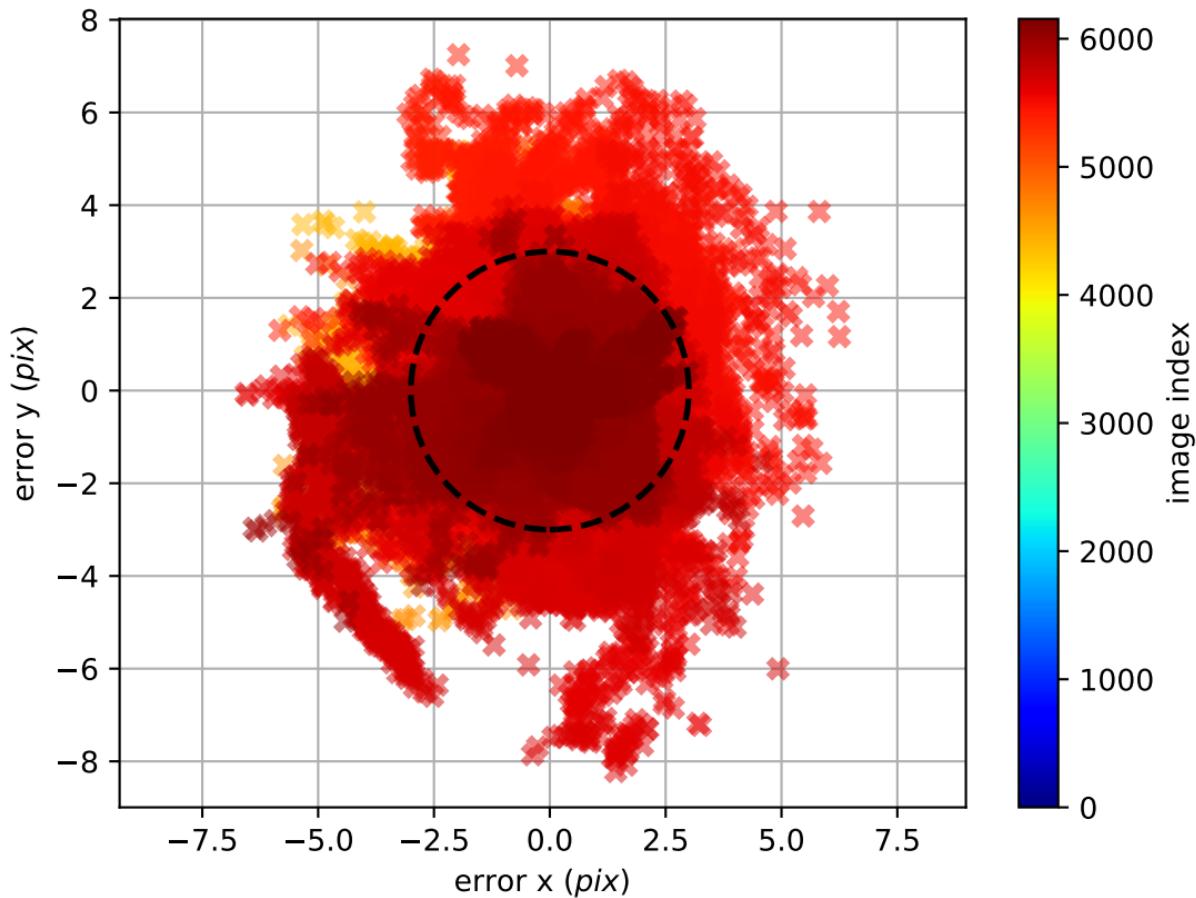
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

