

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.28892216713, median 0.235965953707, std: 0.206774080436

Reprojection error (cam1): mean 0.284398008747, median 0.23437524043, std: 0.200232184547

Gyroscope error (imu0): mean 1.69440112833, median 1.56466103743, std: 0.8344531545

Accelerometer error (imu0): mean 2.3744487868, median 1.35661220416, std: 2.42265668143

Residuals

Reprojection error (cam0) [px]: mean 0.28892216713, median 0.235965953707, std: 0.206774080436

Reprojection error (cam1) [px]: mean 0.284398008747, median 0.23437524043, std: 0.200232184547

Gyroscope error (imu0) [rad/s]: mean 0.00329298238862, median 0.0030408391226, std: 0.00162171725216

Accelerometer error (imu0) [m/s^2]: mean 0.0735400084481, median 0.0420161822439, std: 0.0750330745434

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[-0.99999728  0.00010004  0.00233038 -0.00674408]
 [-0.00009808  0.99999964 -0.00084165  0.03116879]
 [-0.00233046  0.00084142  0.99999693 -0.02236674]
 [ 0.          0.          0.          1.        ]]
```

T_ic: (cam0 to imu0):

```
[[-0.99999728 -0.00009808 -0.00233046  0.00669499]
 [ 0.00010004  0.99999964  0.00084142 -0.03114929]
 [ 0.00233038 -0.00084165  0.99999693  0.02240862]
 [ 0.          0.          0.          1.        ]]
```

timeshift cam0 to imu0: [s] ($t_{\text{imu}} = t_{\text{cam}} + \text{shift}$)

0.00422036915187

Transformation (cam1):

T_ci: (imu0 to cam1):
[[0.99999413 0.00017929 0.00342113 -0.05674918]
[-0.00017545 0.99999936 -0.00112066 0.03117969]
[-0.00342132 0.00112005 0.99999352 -0.02233064]
[0. 0. 0. 1.]]

T_ic: (cam1 to imu0):
[[0.99999413 -0.00017545 -0.00342132 0.05667792]
[0.00017929 0.99999936 0.00112005 -0.03114448]
[0.00342113 -0.00112066 0.99999352 0.02255958]
[0. 0. 0. 1.]]

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
0.00422179417009

Baselines:

Baseline (cam0 to cam1):
[[0.999994 0.00007833 0.00109082 -0.04998315]
[-0.00007803 0.99999996 -0.00027882 0.00000413]
[-0.00109084 0.00027874 0.99999937 0.00002004]
[0. 0. 0. 1.]]
baseline norm: 0.0499831568537 [m]

Gravity vector in target coords: [m/s^2]
[-0.03545277 -9.80648458 0.00511933]

Calibration configuration

=====

cam0

Camera model: pinhole
Focal length: [420.3293424072411, 422.0938563331847]
Principal point: [427.46982182827145, 235.96662924080889]
Distortion model: radtan
Distortion coefficients: [-0.0006325857315915039, 0.0004755762420834004, -0.00036144795825349086, 0.00010234072856141909]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.0625 [m]
Spacing 0.01875 [m]

cam1

=====

Camera model: pinhole
Focal length: [420.3392876578212, 422.11848956997335]
Principal point: [427.5257825266123, 236.10169089242632]
Distortion model: radtan
Distortion coefficients: [-0.0001997374045288431, 0.0003001280579079632, -0.0004155930801938355, -0.0001946012297300367]
Type: aprilgrid
Tags:
Rows: 6
Cols: 6
Size: 0.0625 [m]
Spacing 0.01875 [m]

IMU configuration

=====

IMU0:

Model: calibrated
Update rate: 200.0

Accelerometer:

Noise density: 0.0021900088539

Noise density (discrete): 0.030971402229

Random walk: 0.000144316667411

Gyroscope:

Noise density: 0.000137422605449

Noise density (discrete): 0.00194344912403

Random walk: 2.33885607889e-06

T_{ib} (imu0 to imu0)

[[1. 0. 0. 0.]

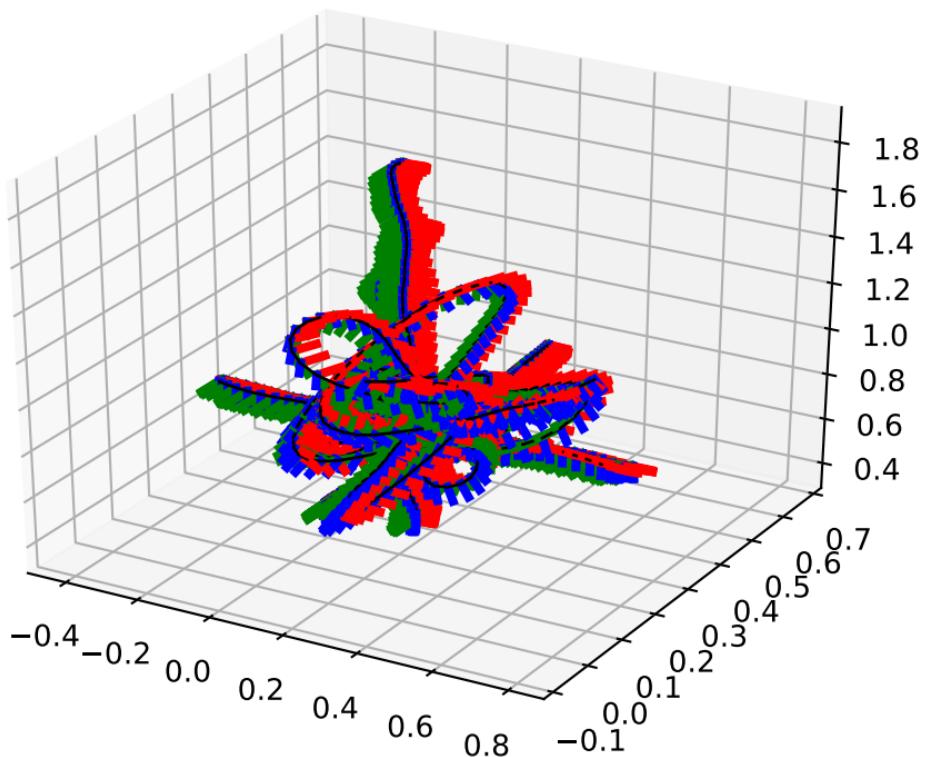
 [0. 1. 0. 0.]

 [0. 0. 1. 0.]

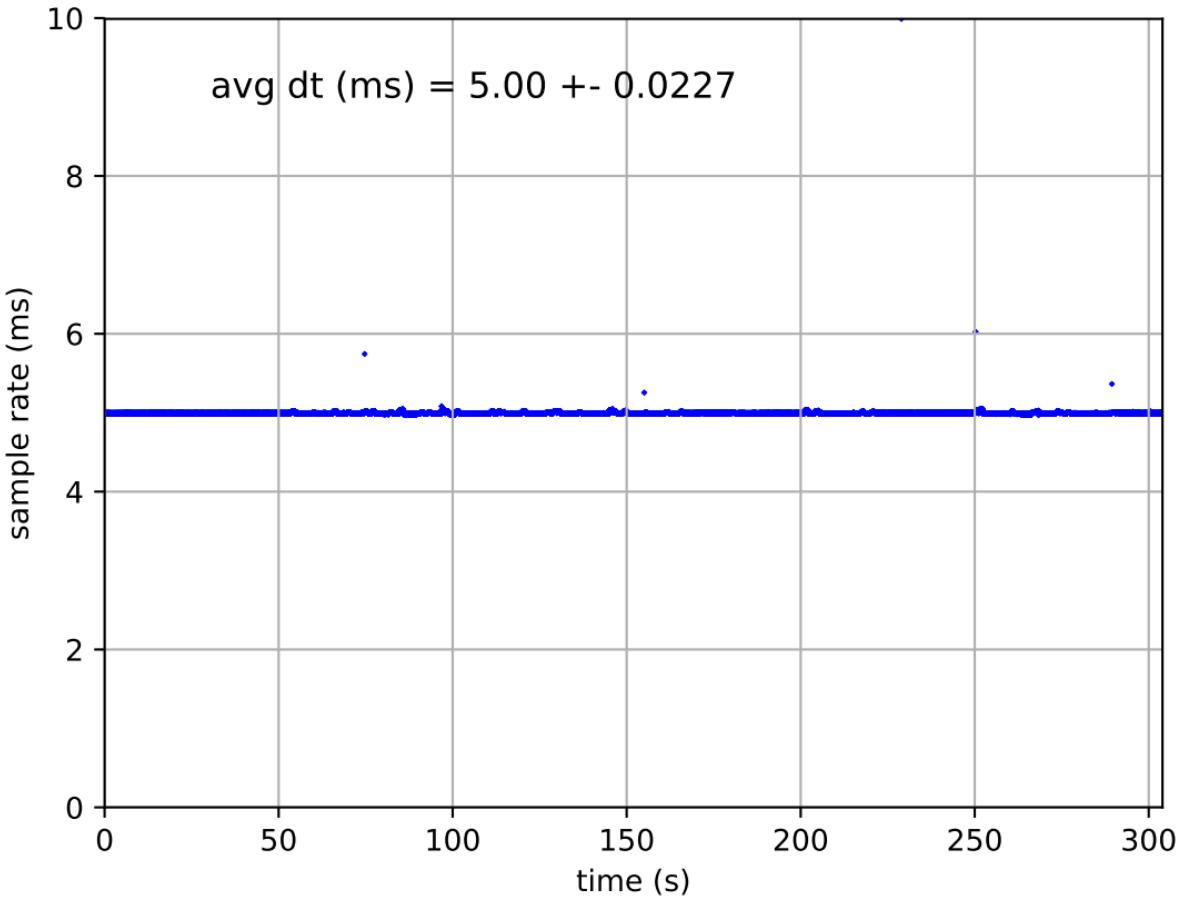
 [0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

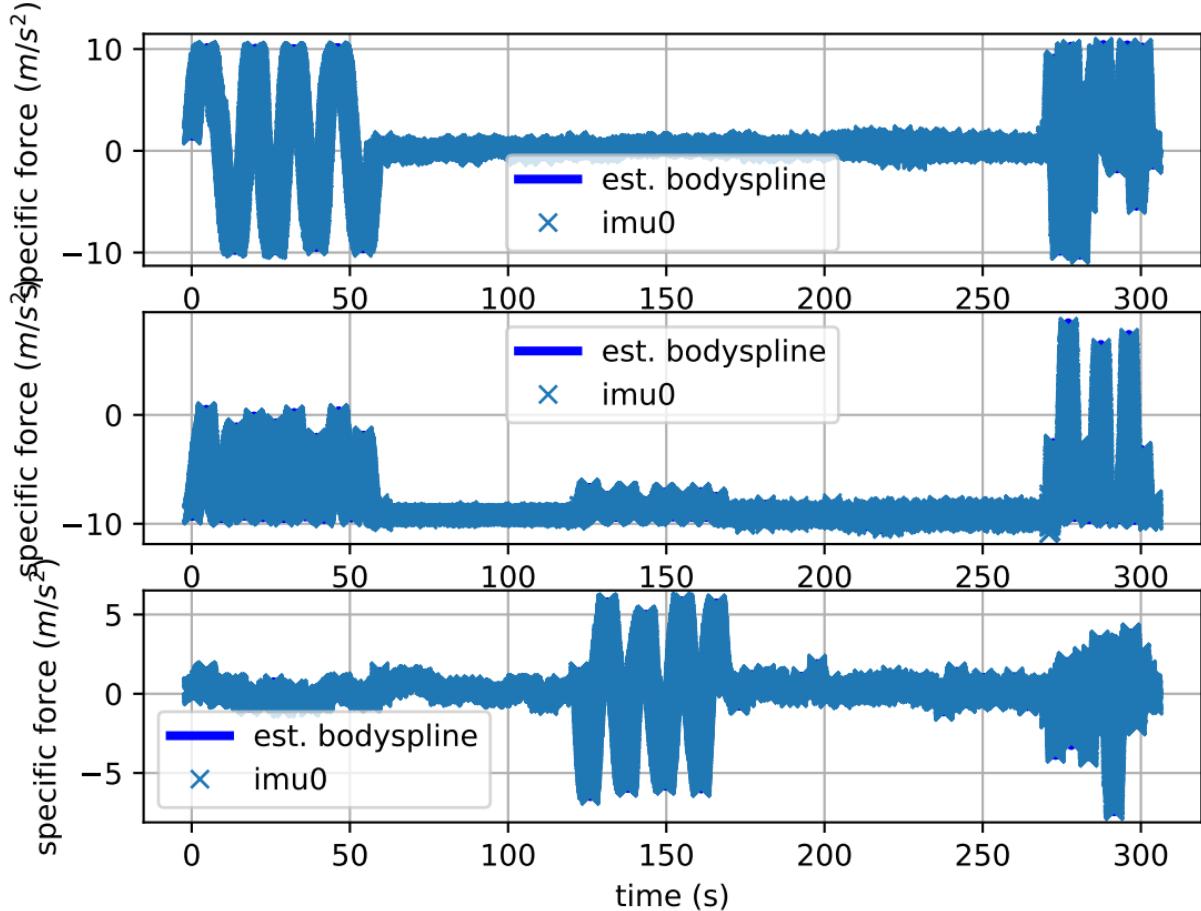
imu0: estimated poses



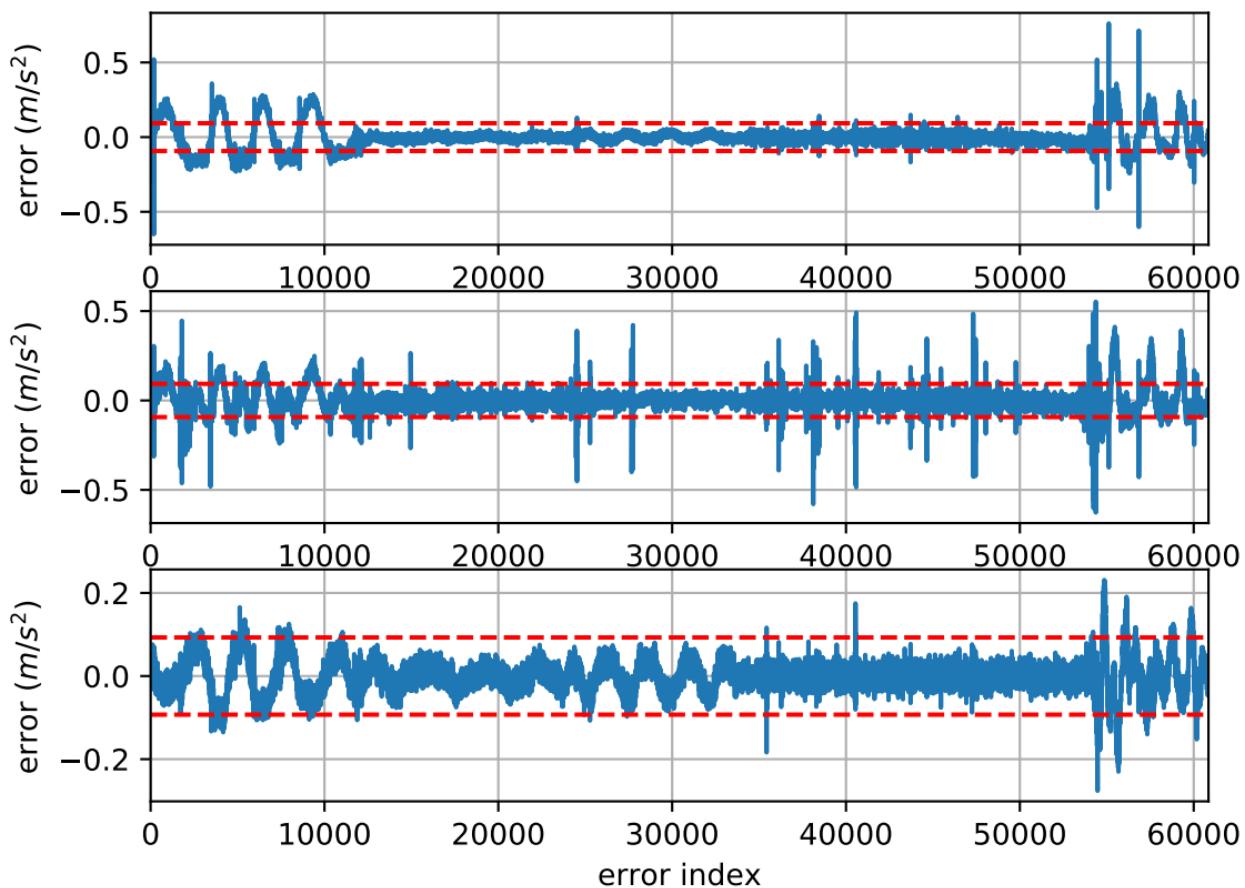
imu0: sample inertial rate



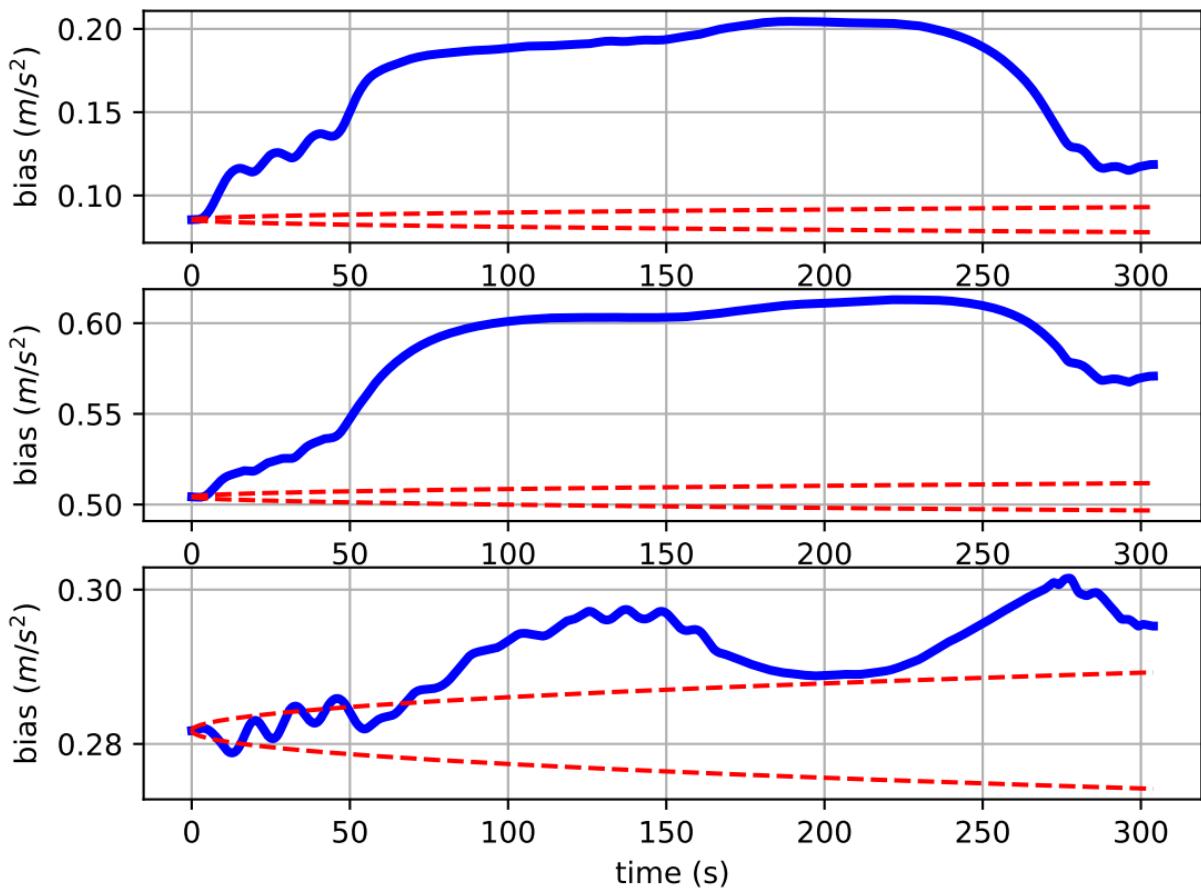
Comparison of predicted and measured specific force (imu0 frame)



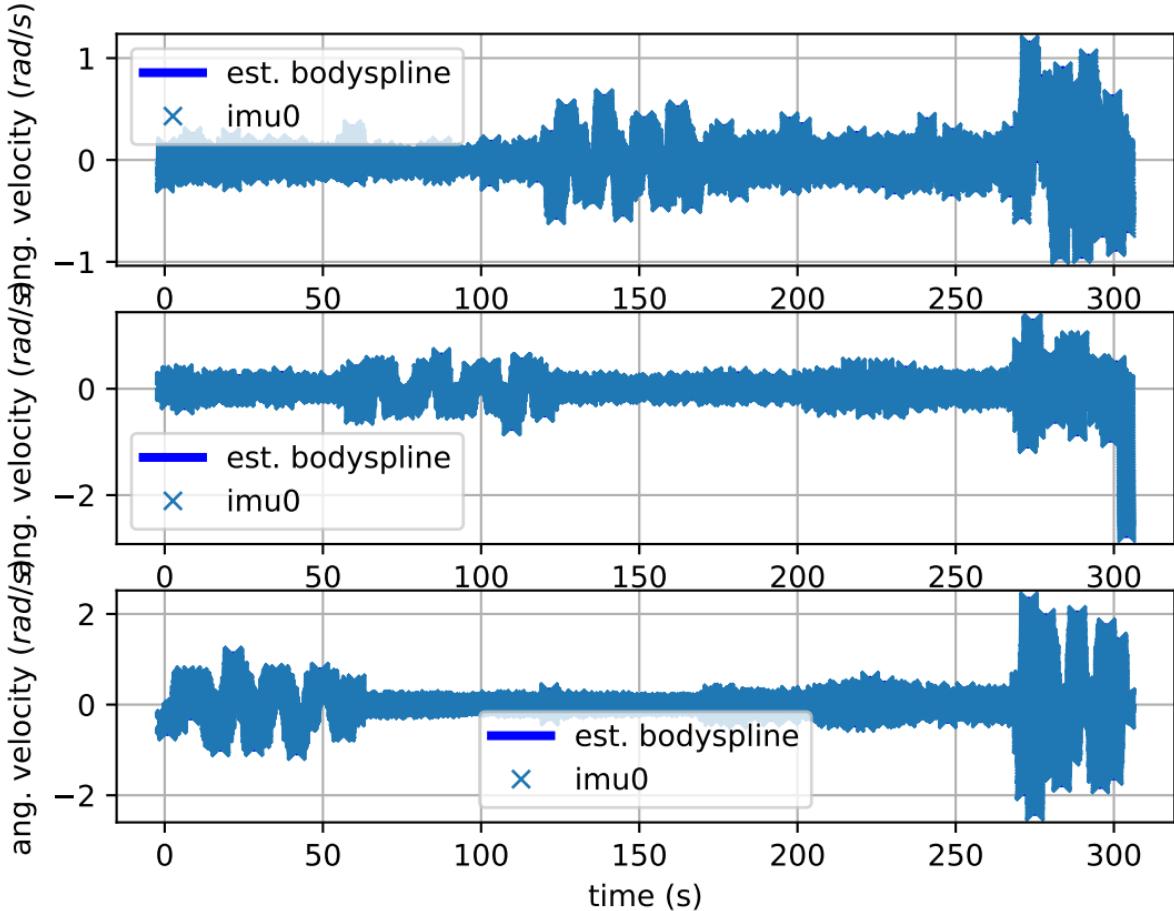
imu0: acceleration error



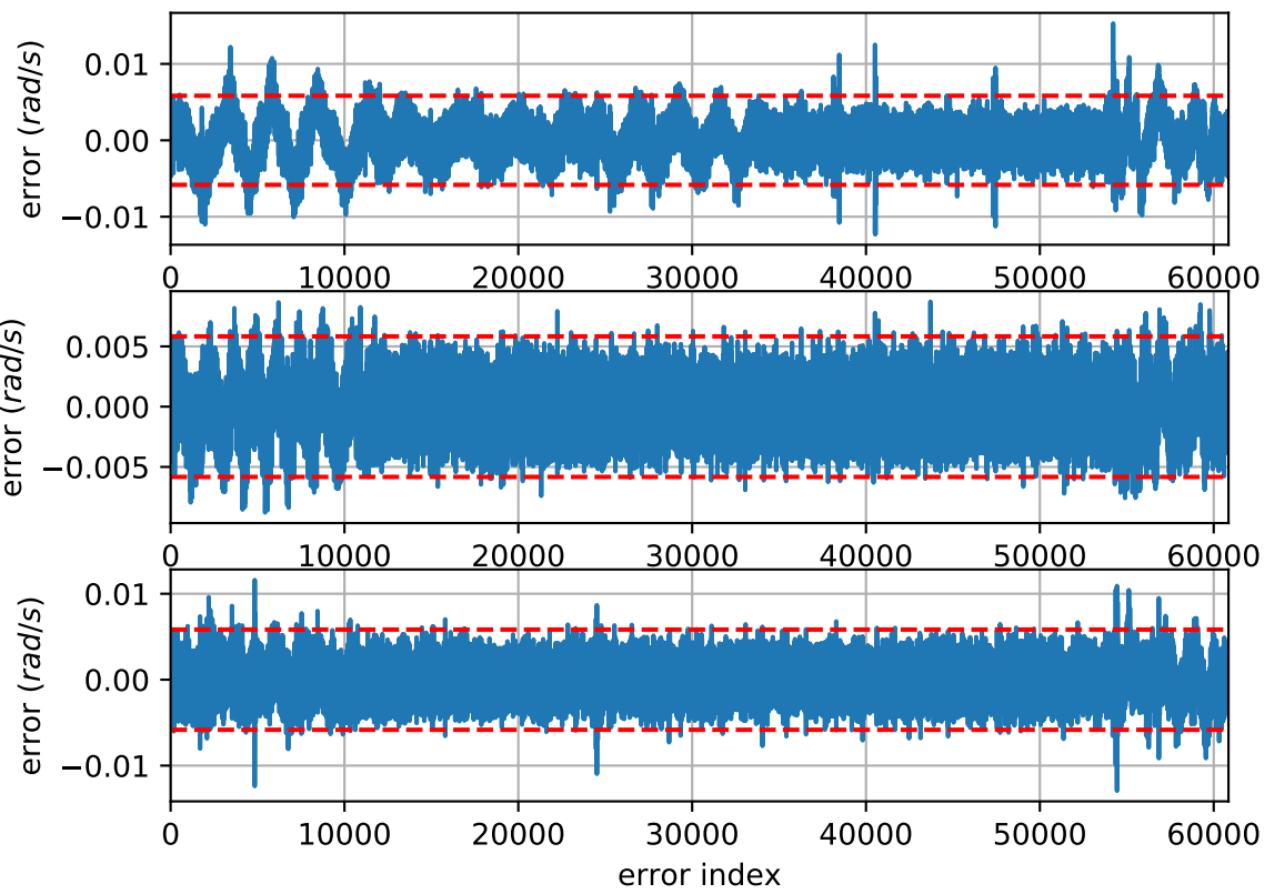
imu0: estimated accelerometer bias (imu frame)



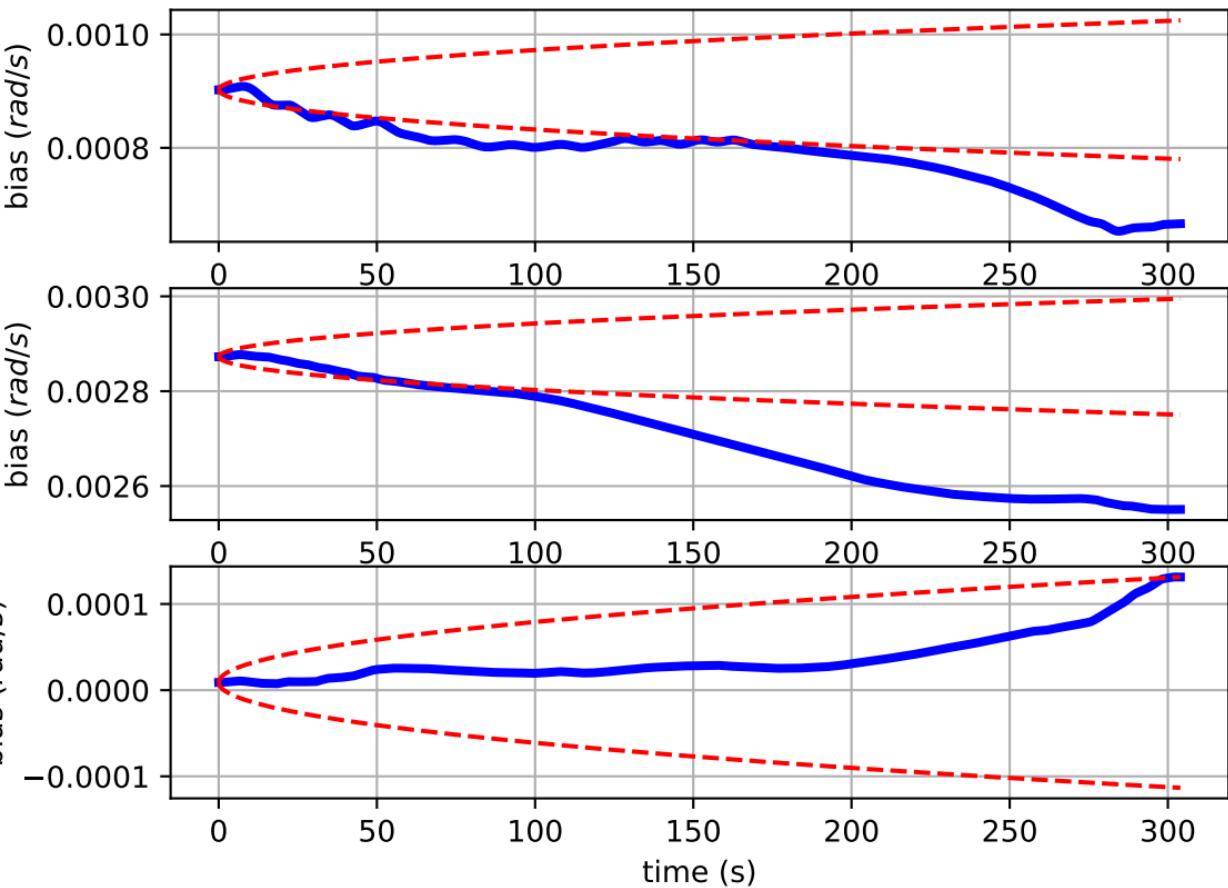
Comparison of predicted and measured angular velocities (body frame)



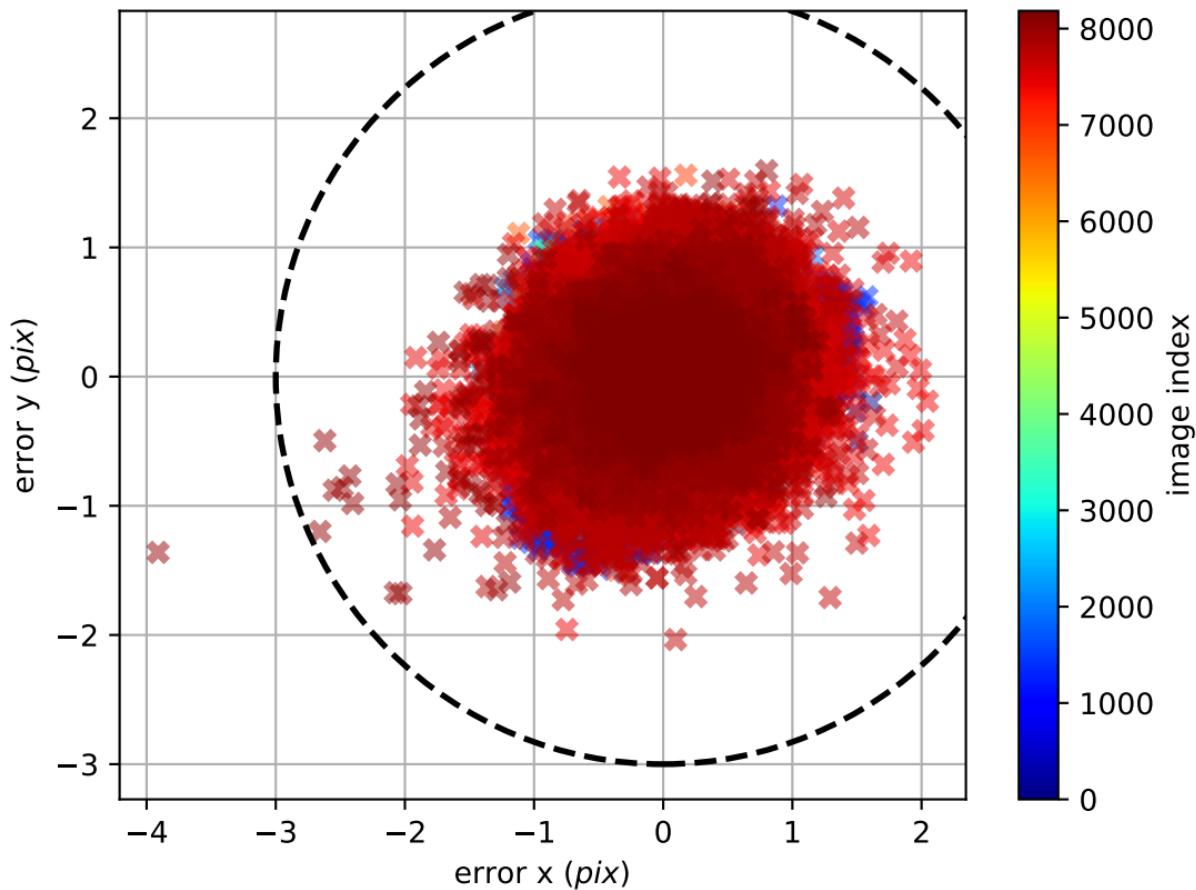
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

