

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.129020916316, median 0.108573212305, std: 0.0941893649289

Reprojection error (cam1): mean 0.127005279088, median 0.105252952079, std: 0.101563478203

Gyroscope error (imu0): mean 0.209526787847, median 0.172262470732, std: 0.15826200304

Accelerometer error (imu0): mean 0.241143574432, median 0.201351787983, std: 0.213767426901

Residuals

Reprojection error (cam0) [px]: mean 0.129020916316, median 0.108573212305, std: 0.0941893649289

Reprojection error (cam1) [px]: mean 0.127005279088, median 0.105252952079, std: 0.101563478203

Gyroscope error (imu0) [rad/s]: mean 0.0121183326693, median 0.0099630884825, std: 0.009153347986

Accelerometer error (imu0) [m/s^2]: mean 0.0892949128684, median 0.0745601055563, std: 0.079157588

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[-0.010428 -0.99993979  0.0034166  0.00190773]
 [ 0.00818684 -0.00350205 -0.99996035 -0.00381261]
 [ 0.99991211 -0.01039962  0.00822286 -0.0294844 ]
 [ 0.        0.        0.        1.      ]]
```

T_ic: (cam0 to imu0):

```
[[-0.010428  0.00818684  0.99991211  0.02953292]
 [-0.99993979 -0.00350205 -0.01039962  0.00158764]
 [ 0.0034166 -0.99996035  0.00822286 -0.00357653]
 [ 0.        0.        0.        1.      ]]
```

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

-0.0252783991726

Transformation (cam1):

T_ci: (imu0 to cam1):

```
[ 0.      0.      0.      1.      ]]
```

T_ic: (cam1 to imu0):

```
[-0.01077511  0.00918616  0.99989975  0.02948152]
[-0.99993655 -0.00338418 -0.01074442 -0.04849771]
[ 0.00328514 -0.99995208  0.00922204 -0.00346608]
[ 0.      0.      0.      1.      ]]
```

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

```
-0.0252824062927
```

Baselines:

```
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Baseline (cam0 to cam1):

```
[ 0.99999993  0.0001286 -0.00034819 -0.05008309]
[-0.00012825  0.99999949  0.00099808 -0.00005858]
[ 0.00034832 -0.00099803  0.99999944 -0.00048776]
[ 0.      0.      0.      1.      ]]
baseline norm: 0.0500854998637 [m]
```

Gravity vector in target coords: [m/s^2]

```
[-0.12372112 -9.80454586 -0.154908 ]
```

Calibration configuration

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cam0

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Camera model: pinhole

Focal length: [381.4105181951269, 382.6273347001329]

Principal point: [328.66135943298445, 237.22564448285215]

Distortion model: radtan

Distortion coefficients: [-0.0006901050354162859, -0.006135082017007439, 1.8127681002950067e-05, 0,

Type: aprilgrid

Tags:

Spacing 0.0264 [m]

cam1

=====
Camera model: pinhole

Focal length: [381.42334984476634, 382.518023981615]

Principal point: [329.02720993563054, 236.93839533999363]

Distortion model: radtan

Distortion coefficients: [-0.00206640692982502, -0.0037664106299200297, -9.45902342804397e-05, 0.00

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.088 [m]

Spacing 0.0264 [m]

IMU configuration

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IMU0:

Model: calibrated

Update rate: 200.0

Accelerometer:

 Noise density: 0.026184002026

 Noise density (discrete): 0.370297707824

 Random walk: 0.000724035534174

Gyroscope:

 Noise density: 0.00408967048807

 Noise density (discrete): 0.0578366746987

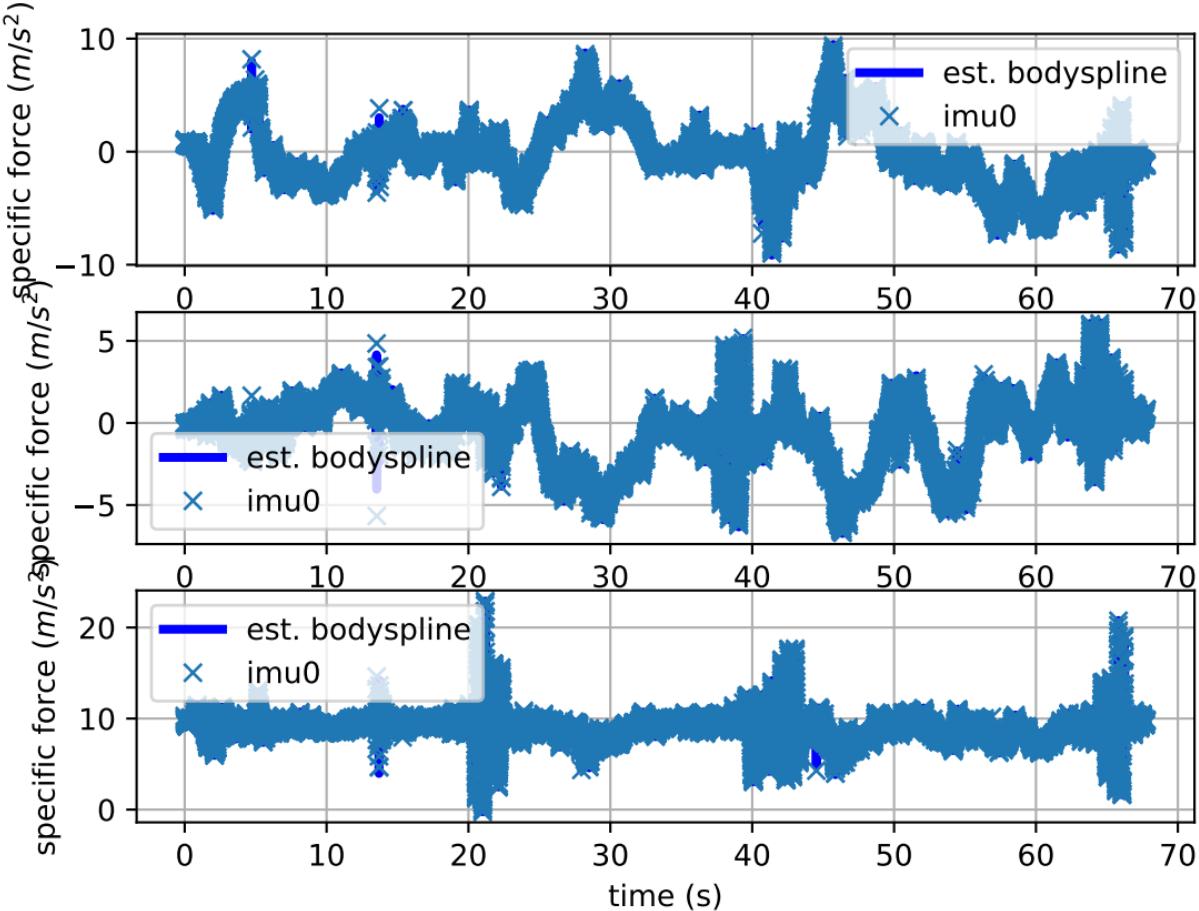
 Random walk: 4.45186361483e-05

T_i_b

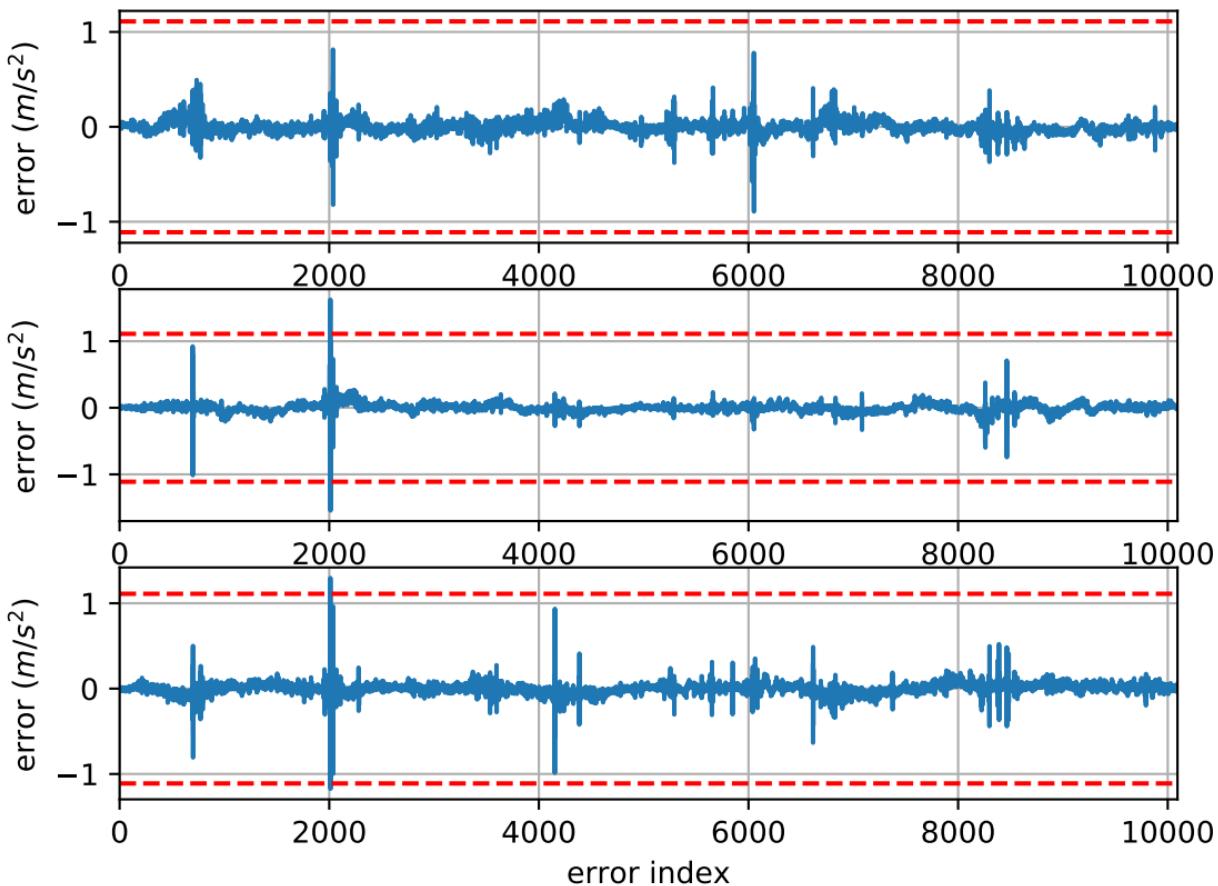
[[1. 0. 0. 0.]

[0. 1. 0. 0.]

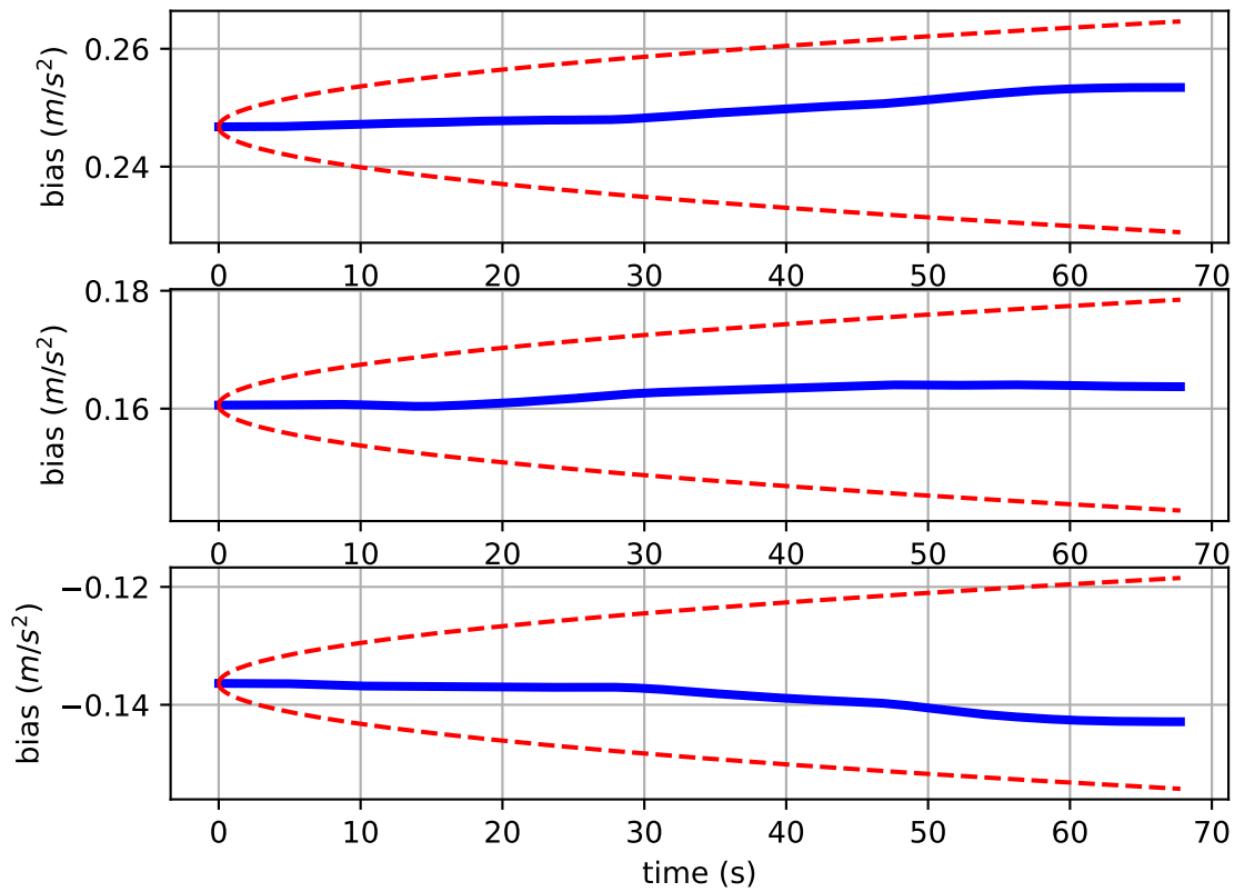
Comparison of predicted and measured specific force (imu0 frame)



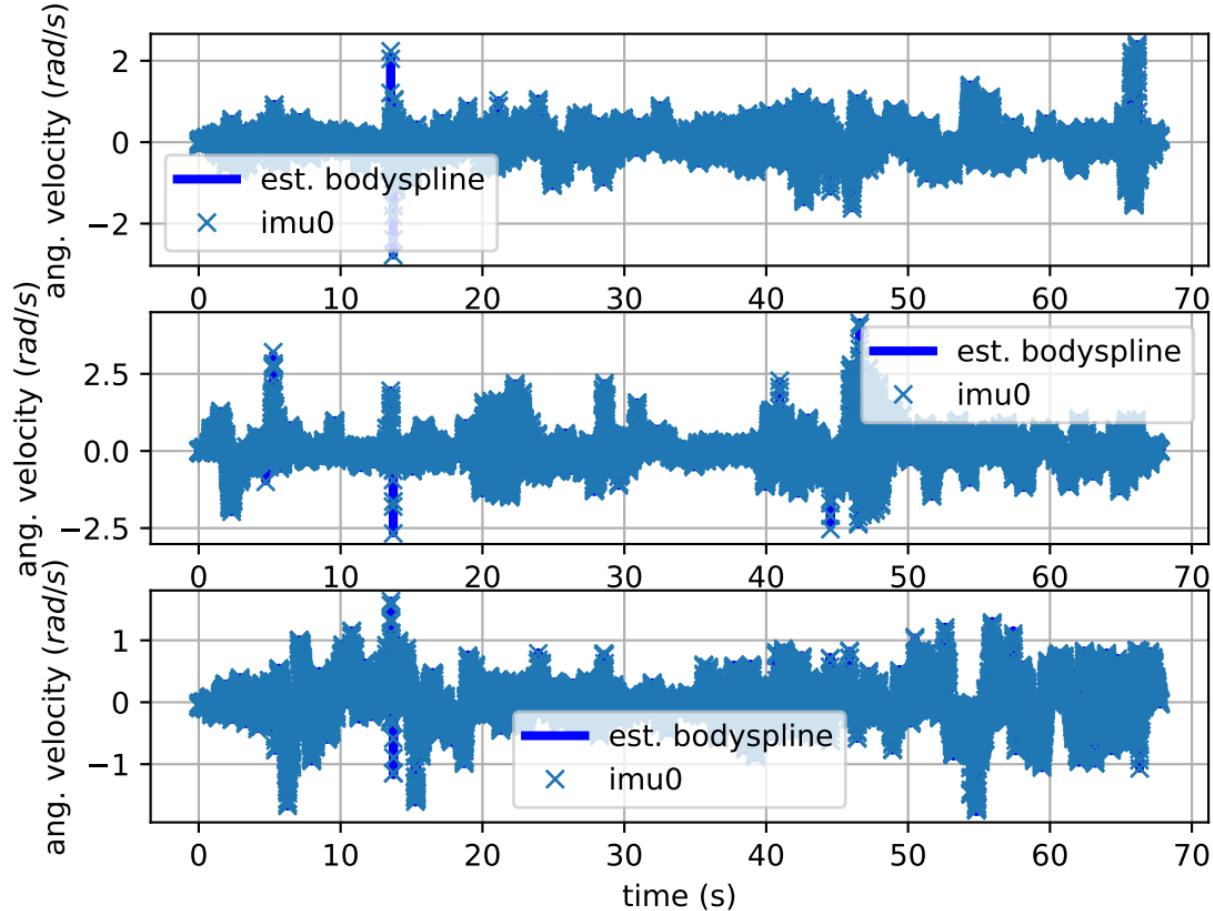
imu0: acceleration error



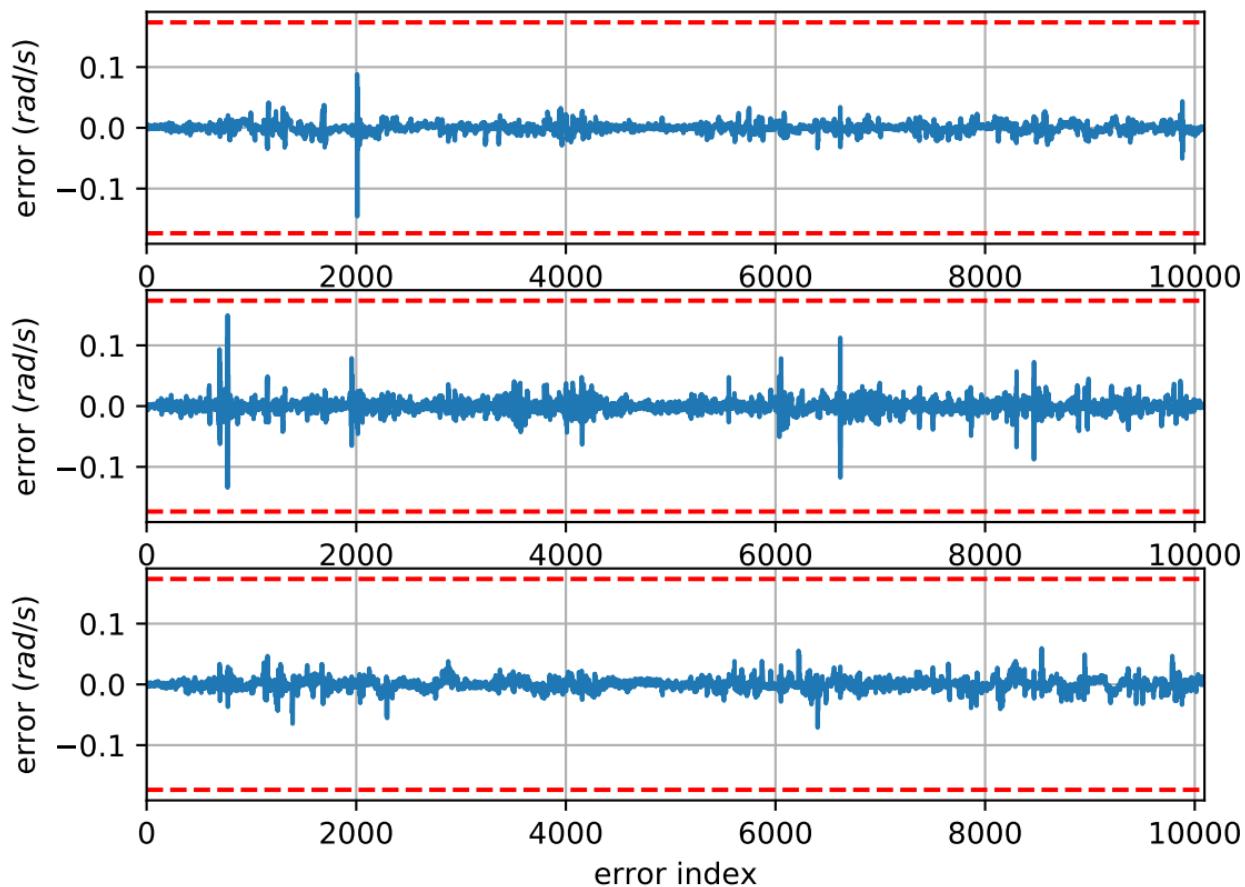
imu0: estimated accelerometer bias (imu frame)



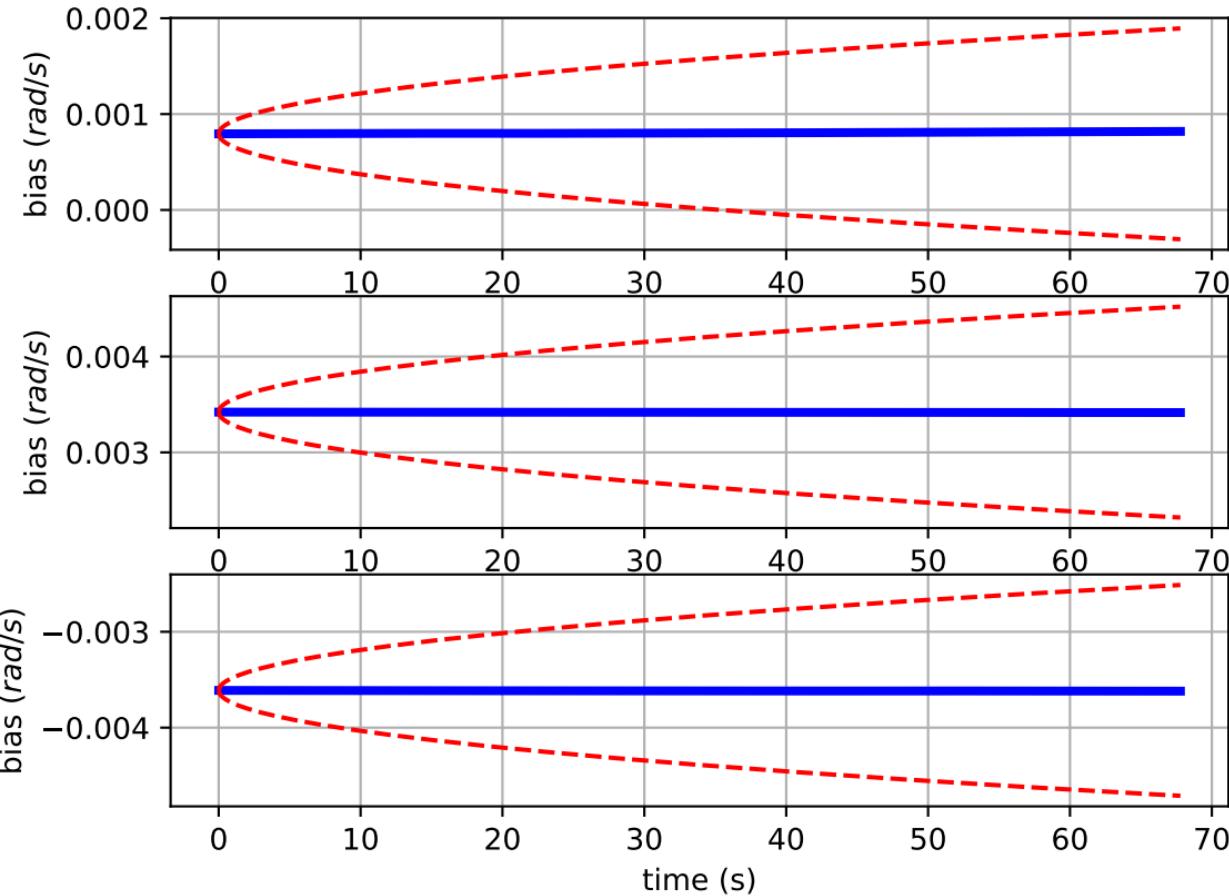
Comparison of predicted and measured angular velocities (body frame)



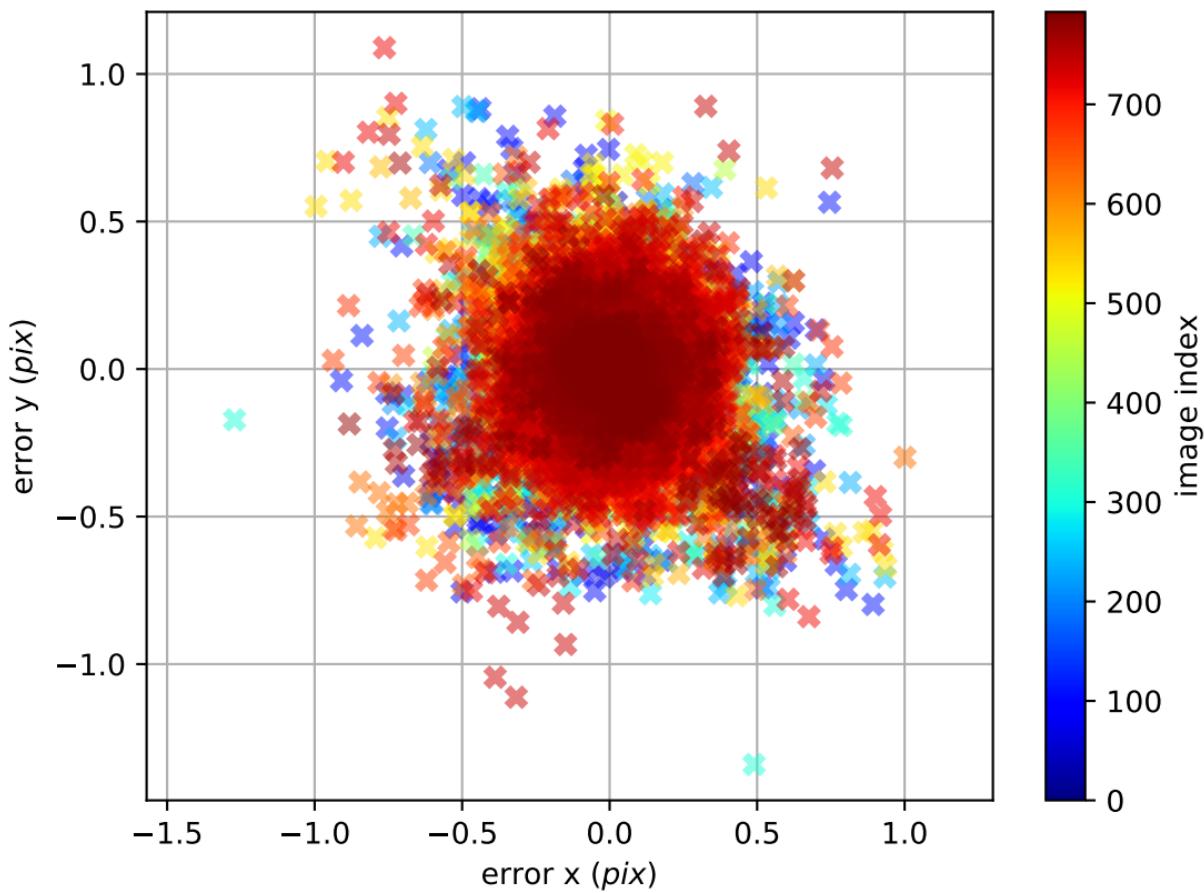
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

