

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.438682163276, median 0.31476720144, std: 0.364984884845
Reprojection error (cam1): mean 0.443991426129, median 0.313989610976, std: 0.370537856415
Gyroscope error (imu0): mean 0.00259276460845, median 0.00133272764446, std: 0.00839237841394
Accelerometer error (imu0): mean 0.000440889220639, median 0.000239430489123, std: 0.00225651498

Residuals

Reprojection error (cam0) [px]: mean 0.438682163276, median 0.31476720144, std: 0.364984884845
Reprojection error (cam1) [px]: mean 0.443991426129, median 0.313989610976, std: 0.370537856415
Gyroscope error (imu0) [rad/s]: mean 8.40494839032e-05, median 4.32029465133e-05, std: 0.000272055
Accelerometer error (imu0) [m/s²]: mean 0.000115446024909, median 6.26944296147e-05, std: 0.000590

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[-0.99984166  0.00264766  0.01759693  0.00033896]
 [-0.00252731 -0.99997329  0.00685822 -0.00002443]
 [ 0.01761461  0.00681266  0.99982164  0.0002358 ]
 [ 0.          0.          0.          1.        ]]
```

T_ic: (cam0 to imu0):

```
[[-0.99984166 -0.00252731  0.01761461  0.00033469]
 [ 0.00264766 -0.99997329  0.00681266 -0.00002694]
 [ 0.01759693  0.00685822  0.99982164 -0.00024155]
 [ 0.          0.          0.          1.        ]]
```

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

0.03300167711212407

Transformation (cam1):

T_ci: (imu0 to cam1):

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

T_ic: (cam1 to imu0):

```
[-0.99990722 -0.00627956  0.01208797 -0.06370024]
 [ 0.00631642 -0.99997551  0.00301335  0.00002977]
 [ 0.01206875  0.00308942  0.9999224  0.00030769]
 [ 0.      0.      0.      1.      ]]
```

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

```
0.03319125632730322
```

Baselines:

```
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```

Baseline (cam0 to cam1):

```
[ 0.99997799 -0.00370641 -0.00550335 -0.06403598]
 [ 0.00368534  0.99998586 -0.00383423 -0.0003471 ]
 [ 0.00551748  0.00381387  0.99997751  0.00022468]
 [ 0.      0.      0.      1.      ]]
```

baseline norm: 0.06403731235627866 [m]

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

```
[ 0.02534817 -9.2336081 -3.30276578]
```

Calibration configuration

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cam0

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```

Camera model: omni

Focal length: [668.4306127086929, 668.4126207494994]

Principal point: [422.5900990541209, 400.4282219335556]

Omni xi: 1.34203624919

Distortion model: radtan

Distortion coefficients: [-0.10728607323824997, -0.40962687890697913, 0.0011370522765466746, -0.0000000000000000]

Type: aprilgrid

Size: 0.0456 [m]
Spacing 0.01368 [m]

cam1

====

Camera model: omni
Focal length: [652.8927198304863, 652.5979241324186]
Principal point: [426.4895777553576, 397.3506534516371]
Omni xi: 1.28853312546
Distortion model: radtan
Distortion coefficients: [-0.12608459307580613, -0.3515685413381141, -0.0006213834722493854, -0.000
Type: aprilgrid
Tags:
Rows: 5
Cols: 5
Size: 0.0456 [m]
Spacing 0.01368 [m]

IMU configuration

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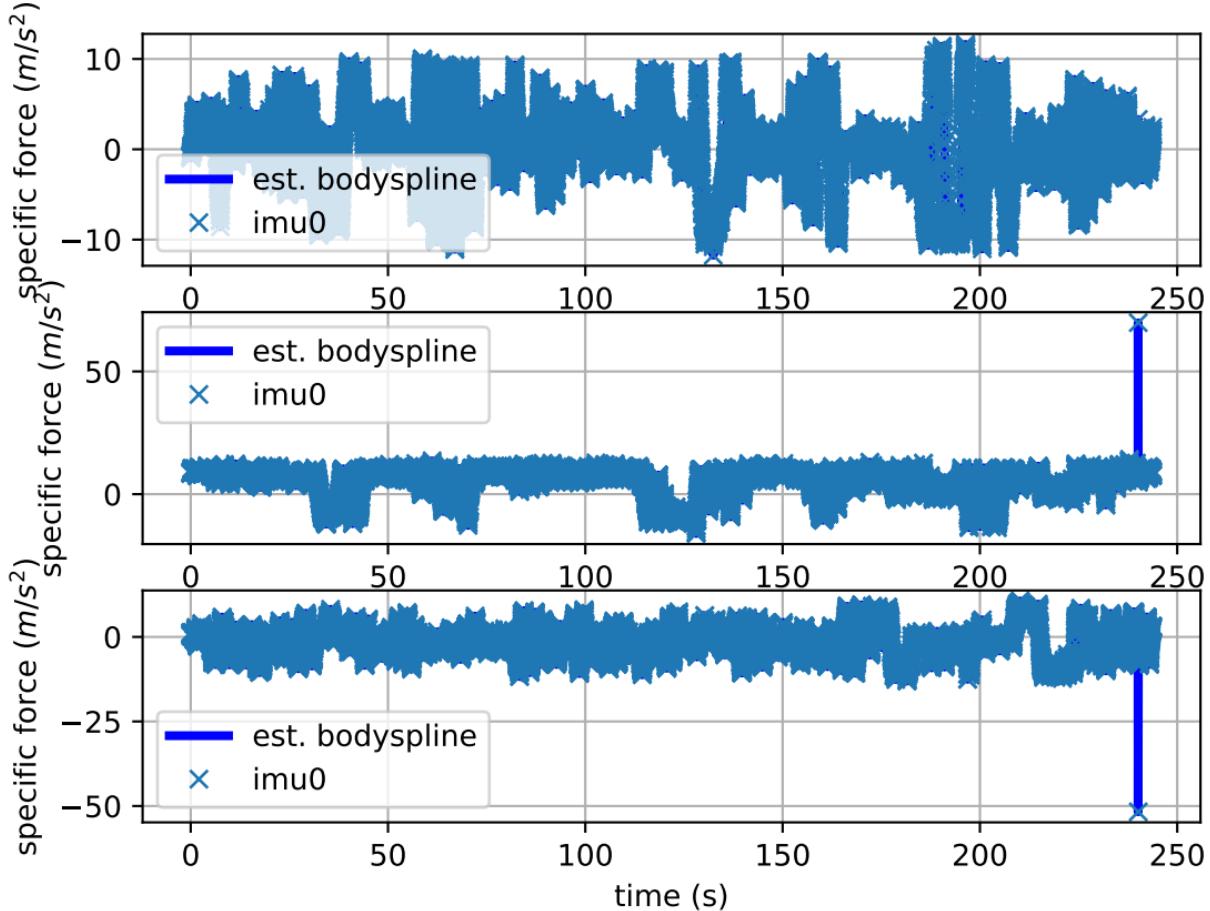
IMU0:

Model: calibrated
Update rate: 200.0
Accelerometer:
Noise density: 0.0185154599506
Noise density (discrete): 0.261848145758
Random walk: 0.000646976244245
Gyroscope:
Noise density: 0.00229222351422
Noise density (discrete): 0.032416935818
Random walk: 2.78733689517e-05
T i b

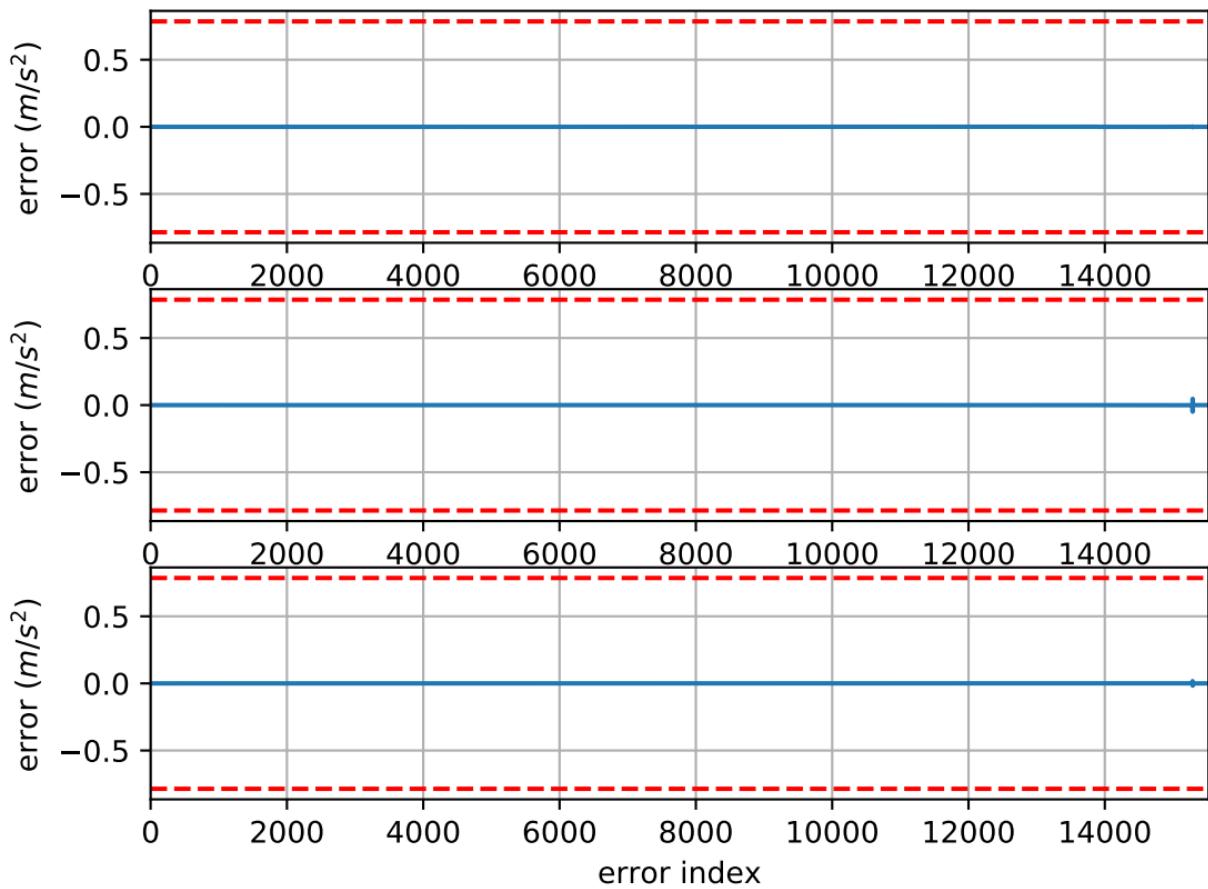
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

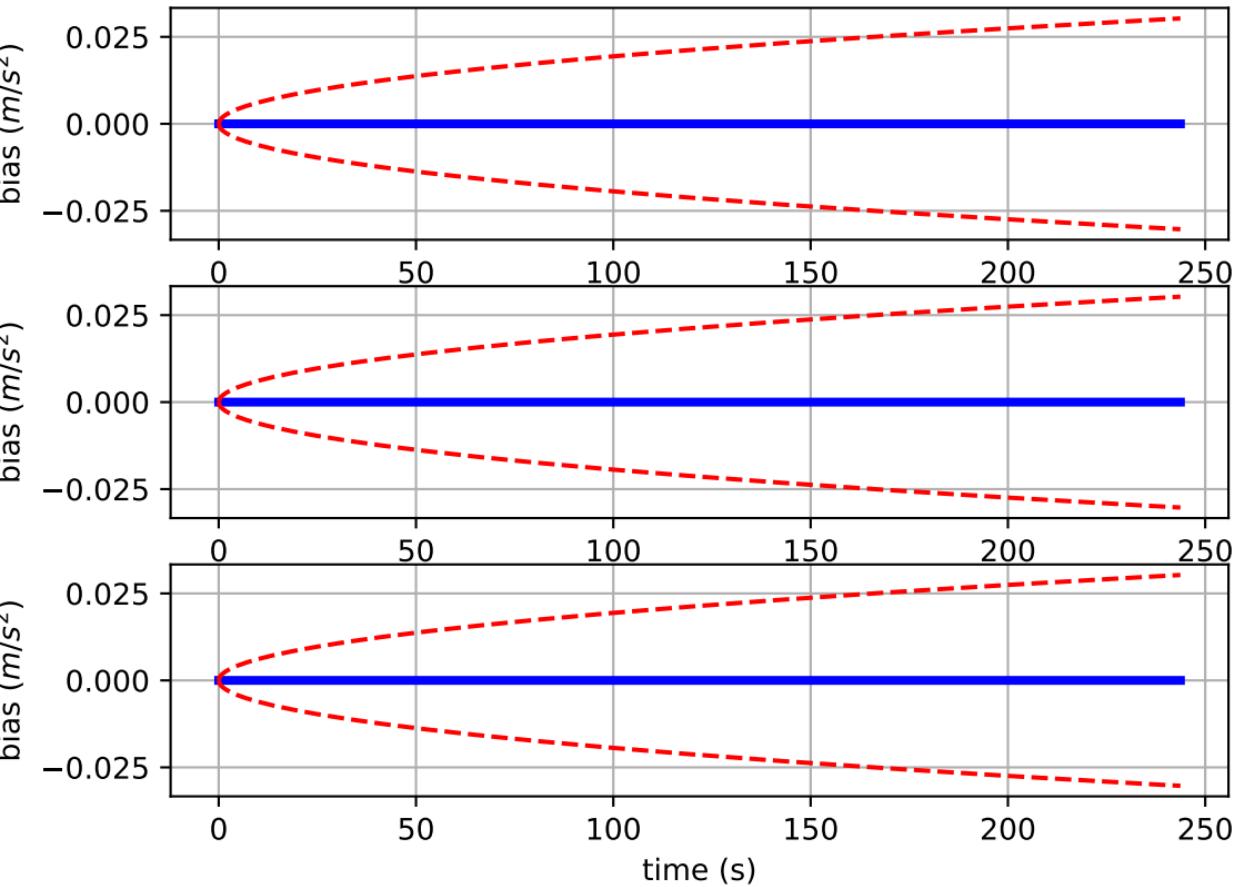
Comparison of predicted and measured specific force (imu0 frame)



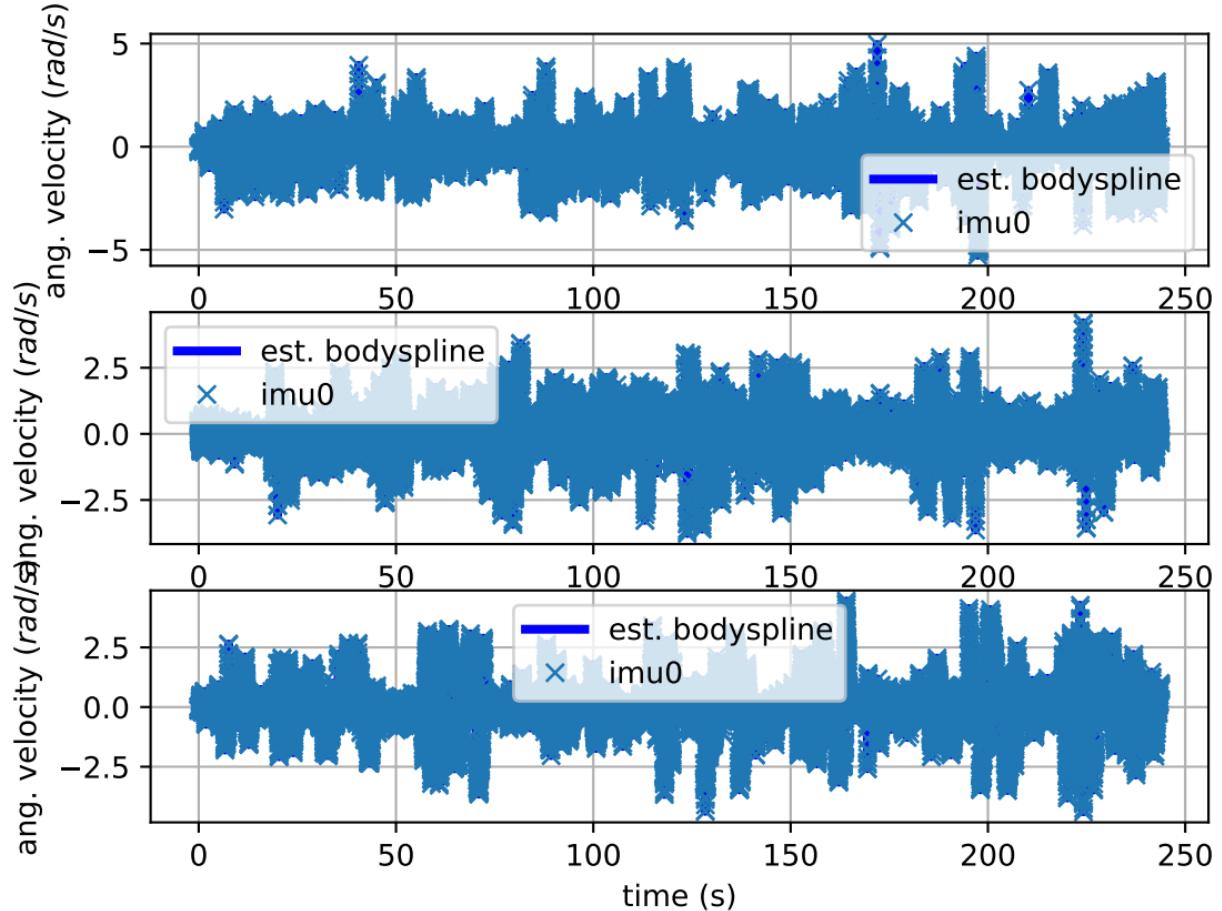
imu0: acceleration error



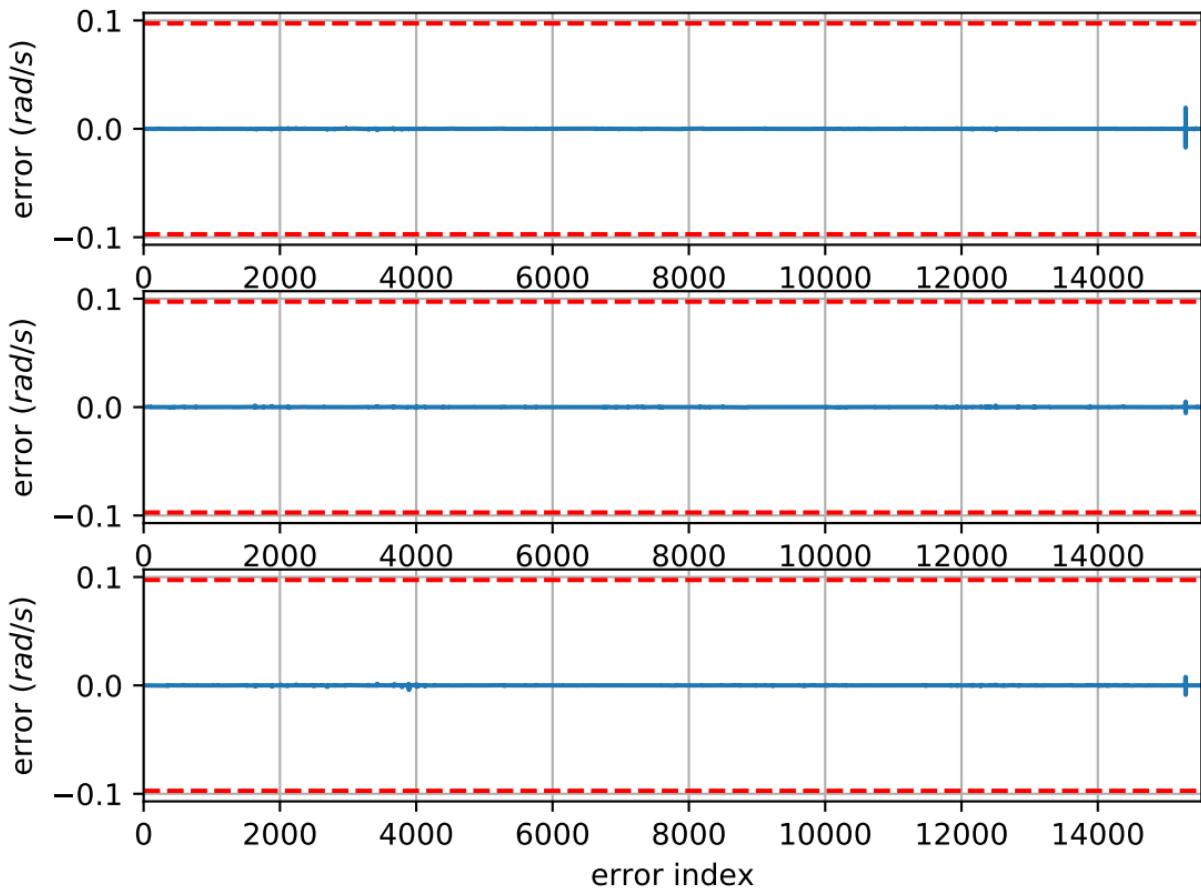
imu0: estimated accelerometer bias (imu frame)



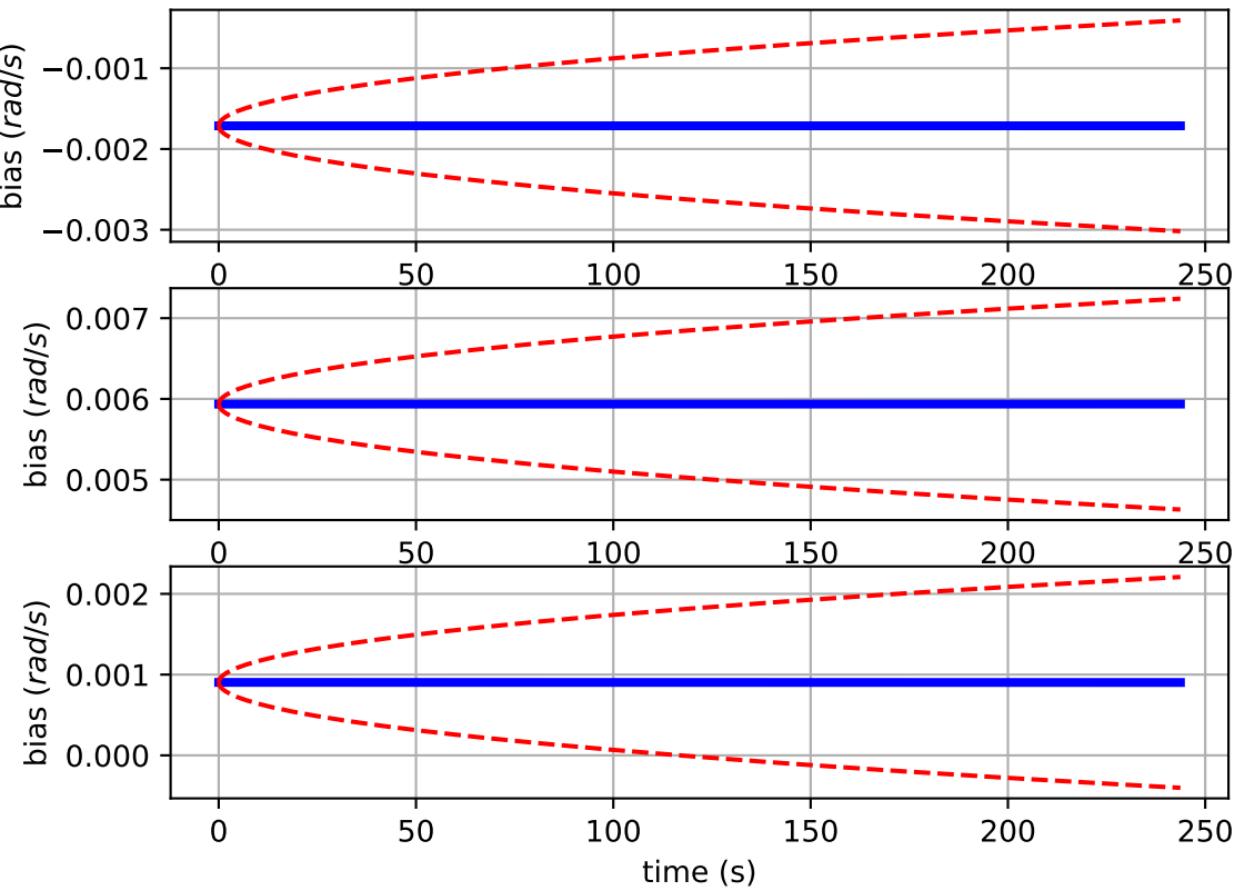
Comparison of predicted and measured angular velocities (body frame)



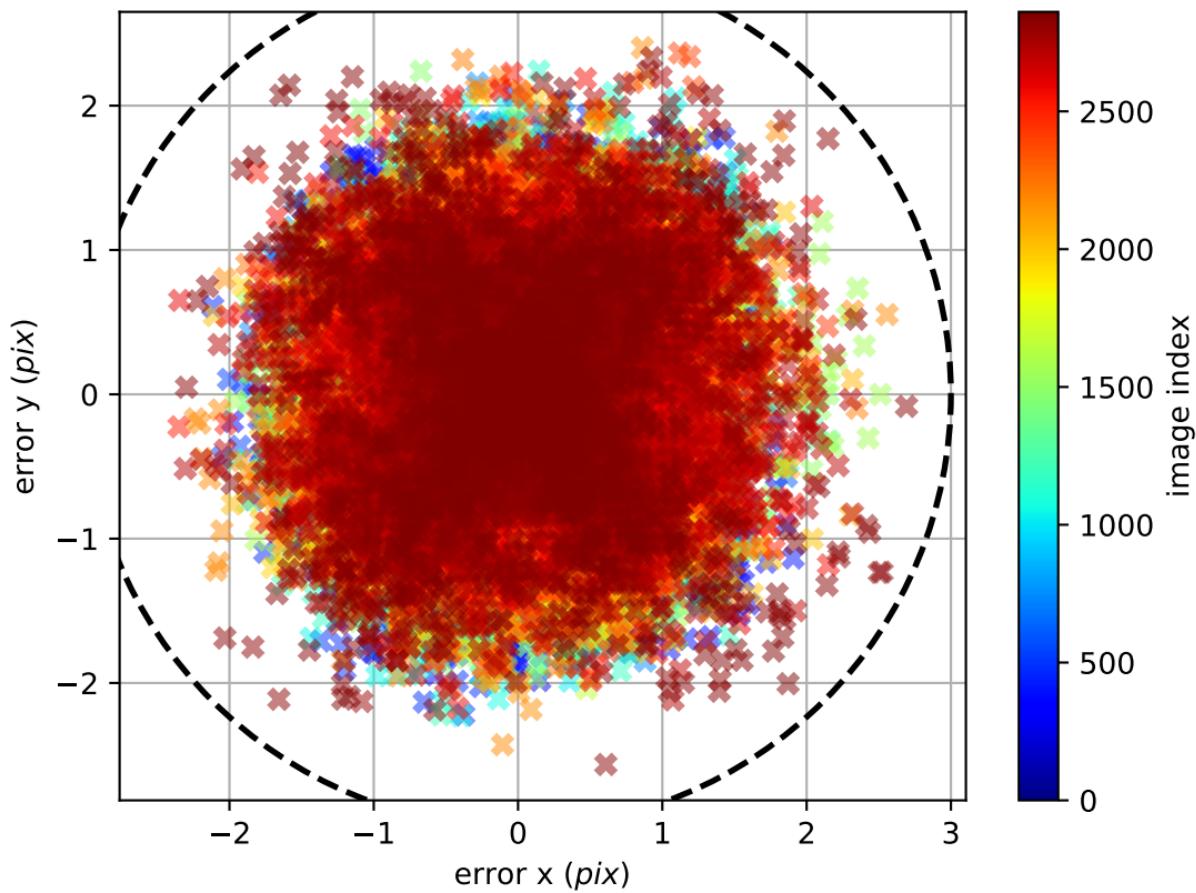
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

