

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.45011650813443177, median 0.33649083252511786, std: 0.3906392332704473
Gyroscope error (imu0): mean 1.0334901232812852, median 0.6625848030628783, std: 1.4268757001948136
Accelerometer error (imu0): mean 0.6744467057736667, median 0.5010168192315111, std: 1.0498475571452621

Residuals

Reprojection error (cam0) [px]: mean 0.45011650813443177, median 0.33649083252511786, std: 0.3906392332704473
Gyroscope error (imu0) [rad/s]: mean 0.00739866332790243, median 0.004743385324750247, std: 0.01021487547746325
Accelerometer error (imu0) [m/s²]: mean 0.04828303624991776, median 0.035867345837243256, std: 0.07515764733461829

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[-0.9299566  0.01665084  0.36729209  0.03233985]
 [-0.02173314 -0.9997167  -0.00970551 -0.00442773]
 [ 0.36702643 -0.01700811  0.93005501 -0.02027062]
 [ 0.          0.          0.          1.          ]]
```

T_ic: (cam0 to imu0):

```
[[-0.9299566 -0.02173314  0.36702643  0.03741828]
 [ 0.01665084 -0.9997167  -0.01700811 -0.00530973]
 [ 0.36729209 -0.00970551  0.93005501  0.00693165]
 [ 0.          0.          0.          1.          ]]
```

timeshift cam0 to imu0: [s] ($t_{imu} = t_{cam} + \text{shift}$)
-0.0027926374692824303

Gravity vector in target coords: [m/s²]

```
[ 0.10048488 -9.75686433 -0.98077727]
```

Calibration configuration

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cam0

Camera model: pinhole

Focal length: [563.2531416390391, 563.1577657323634]

Principal point: [664.1185429843965, 404.4646716978373]

Distortion model: equidistant

Distortion coefficients: [-0.010815606304431007, 0.026223545476197024, -0.022330253989059207, 0.007193820478344414]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.0922 [m]

Spacing 0.02766 [m]

IMU configuration

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IMU0:

Model: scale-misalignment

Update rate: 205.0

Accelerometer:

Noise density: 0.005

Noise density (discrete): 0.07158910531638177

Random walk: 6e-05

Gyroscope:

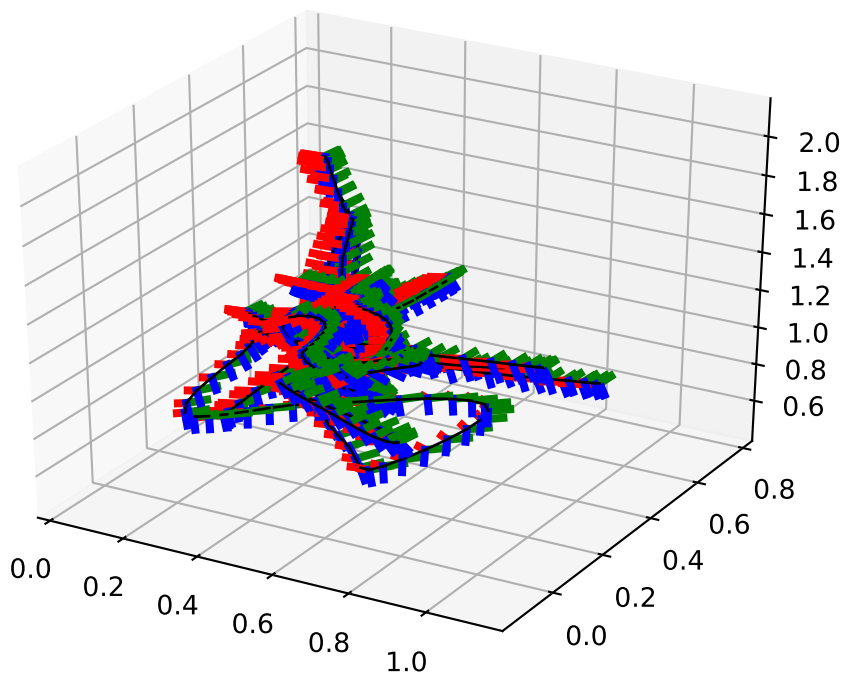
Noise density: 0.0005

Noise density (discrete): 0.007158910531638177

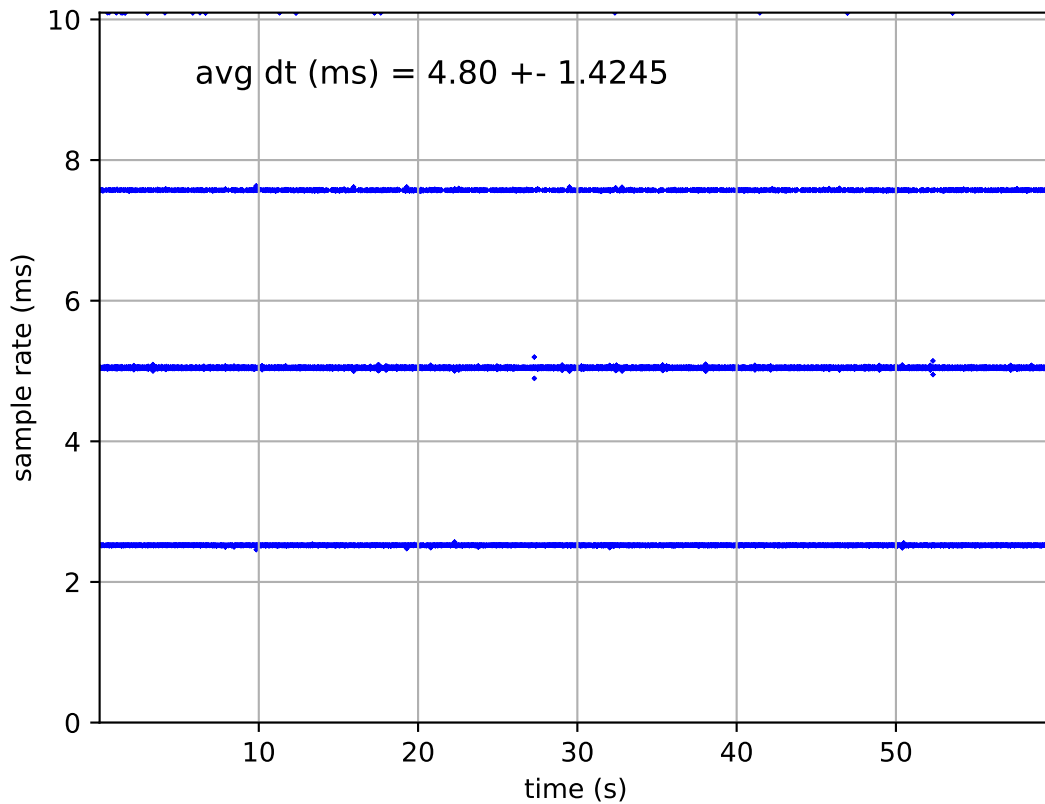
Random walk: 5e-06

```
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]
Gyroscope:
M:
[[ 0.97831297  0.          0.          ]
 [-0.00146878  1.00438887  0.          ]
 [ 0.01470872 -0.00163536  1.00239573]]
A [(rad/s)/(m/s^2)]:
[[-0.00006874 -0.00025814  0.00012108]
 [ 0.00015192  0.00099   -0.00002447]
 [ 0.00007427 -0.00007115 -0.00022609]]
C_gyro_i:
[[ 0.99993907 -0.00320768  0.01056275]
 [ 0.00321447  0.99999464 -0.00062588]
 [-0.01056069  0.0006598   0.99994402]]
Accelerometer:
M:
[[ 0.99841351  0.          0.          ]
 [ 0.00391867  1.00272621  0.          ]
 [-0.01275769 -0.01165876  0.99555901]]
```

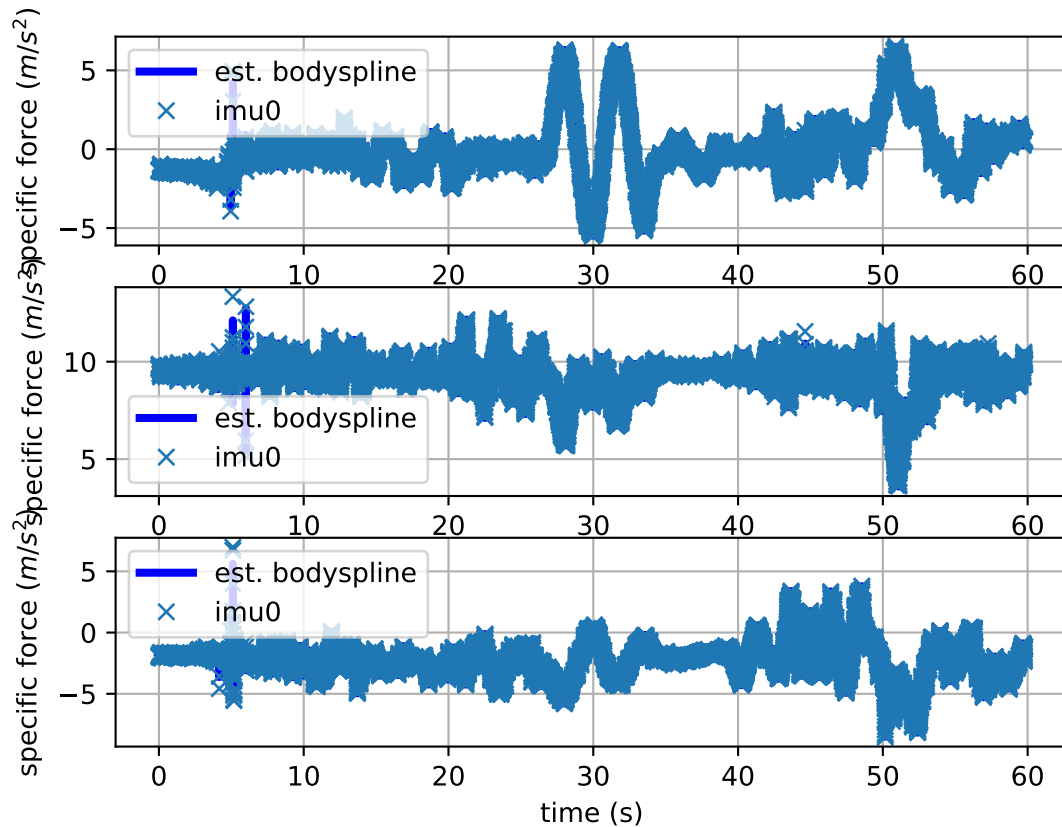
imu0: estimated poses



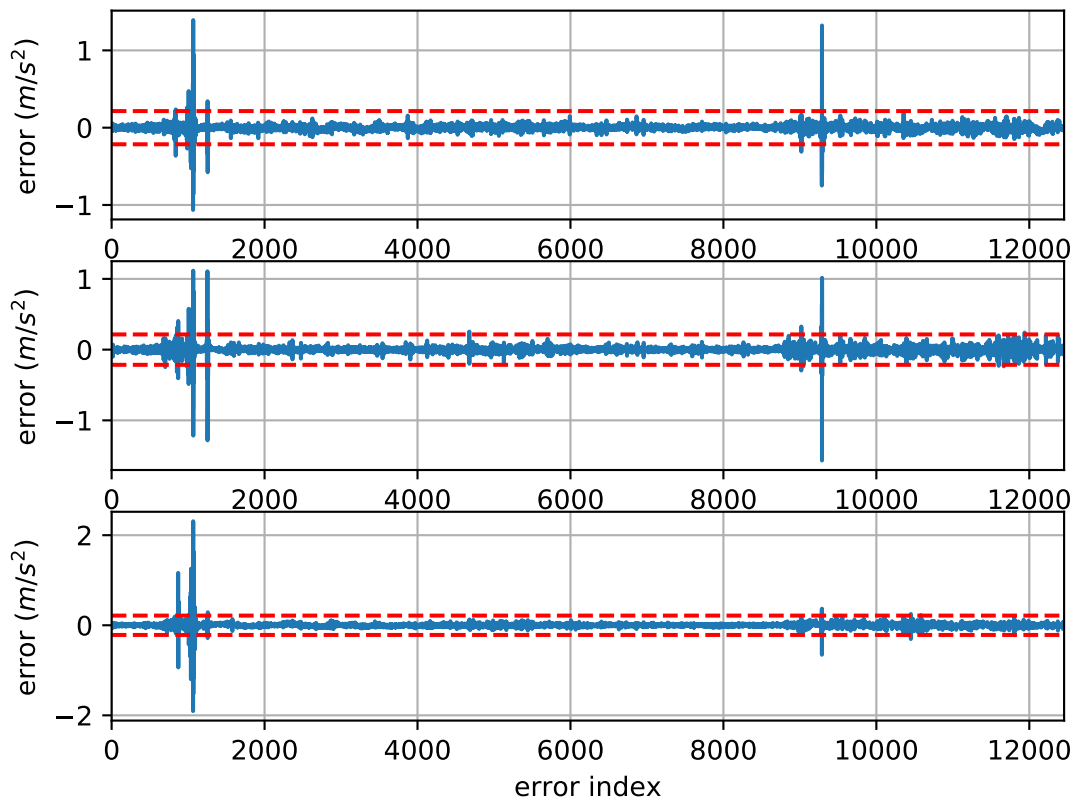
imu0: sample inertial rate



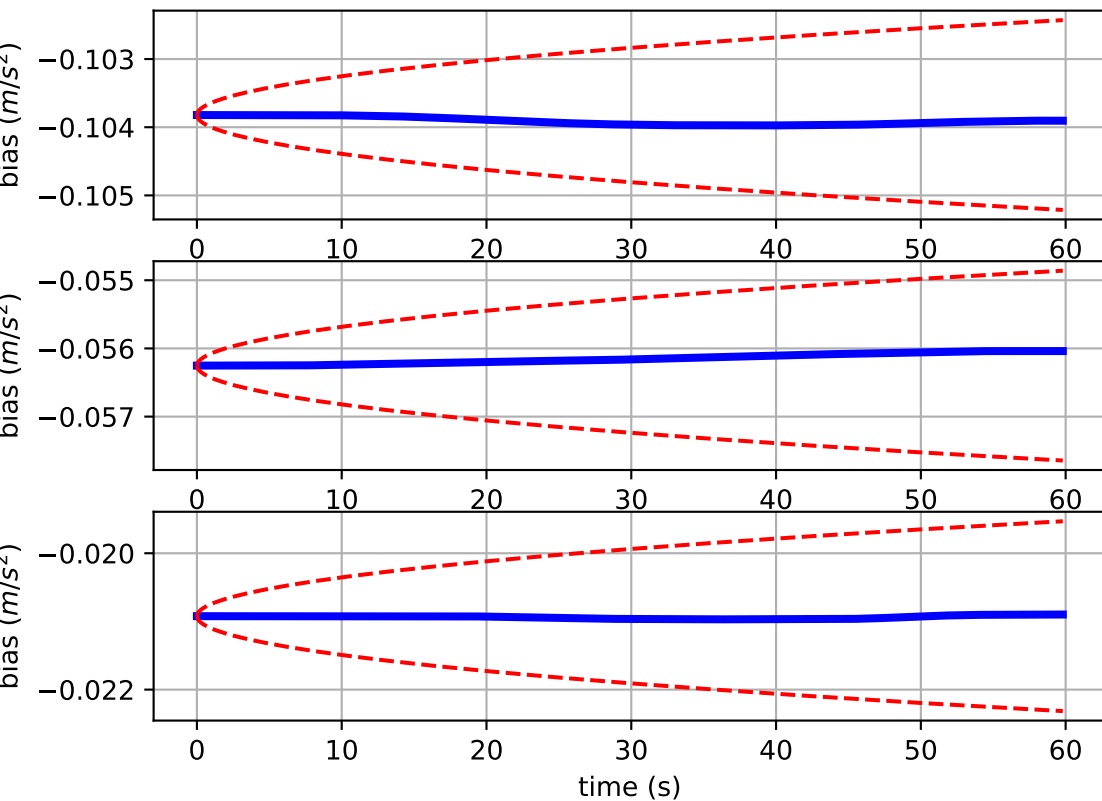
Comparison of predicted and measured specific force (imu0 frame)



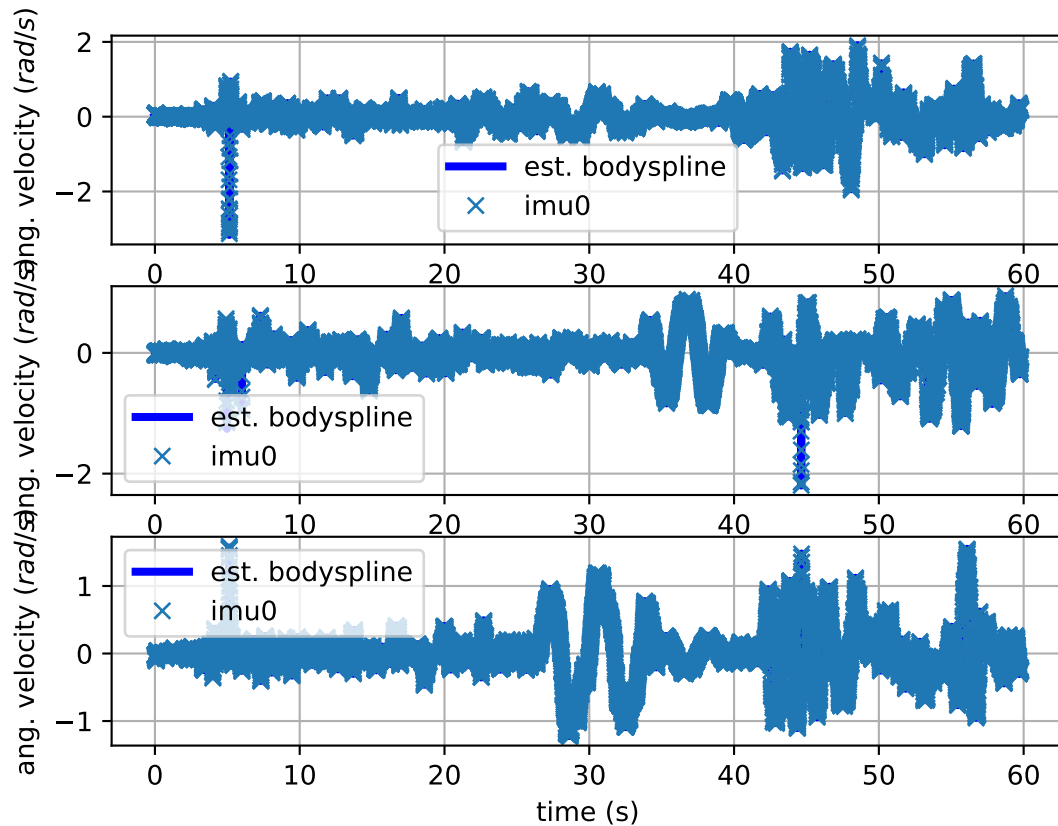
imu0: acceleration error



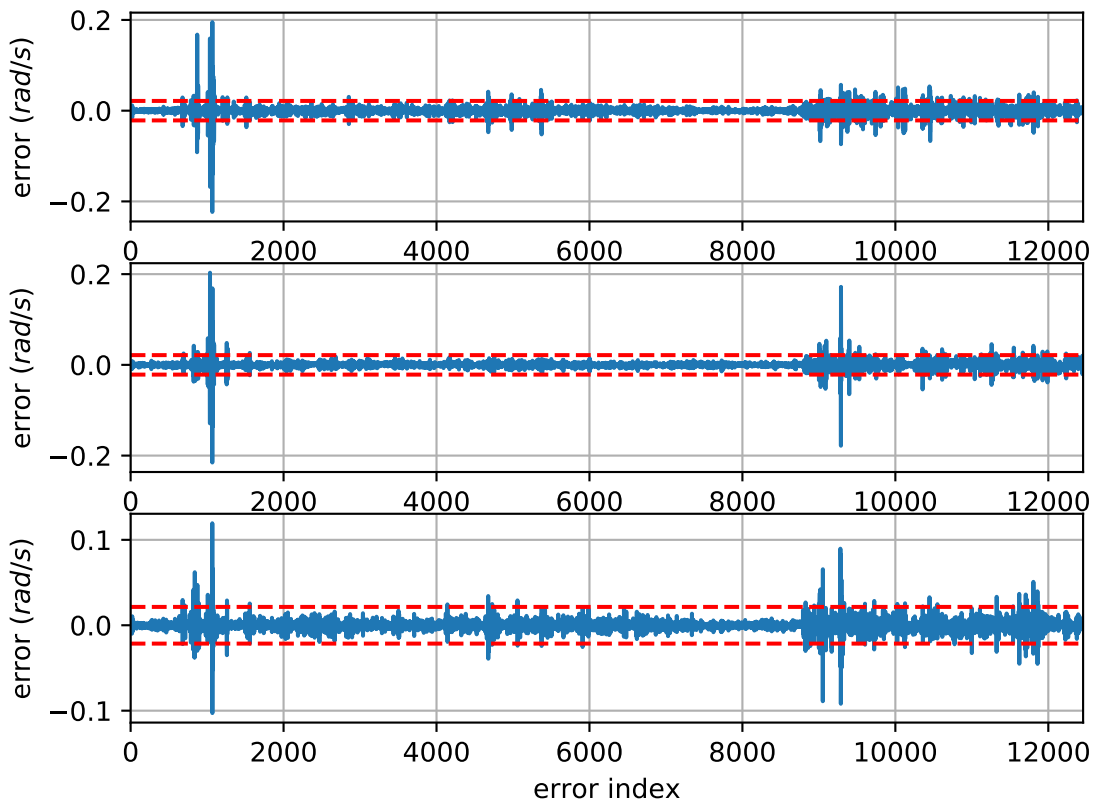
imu0: estimated accelerometer bias (imu frame)



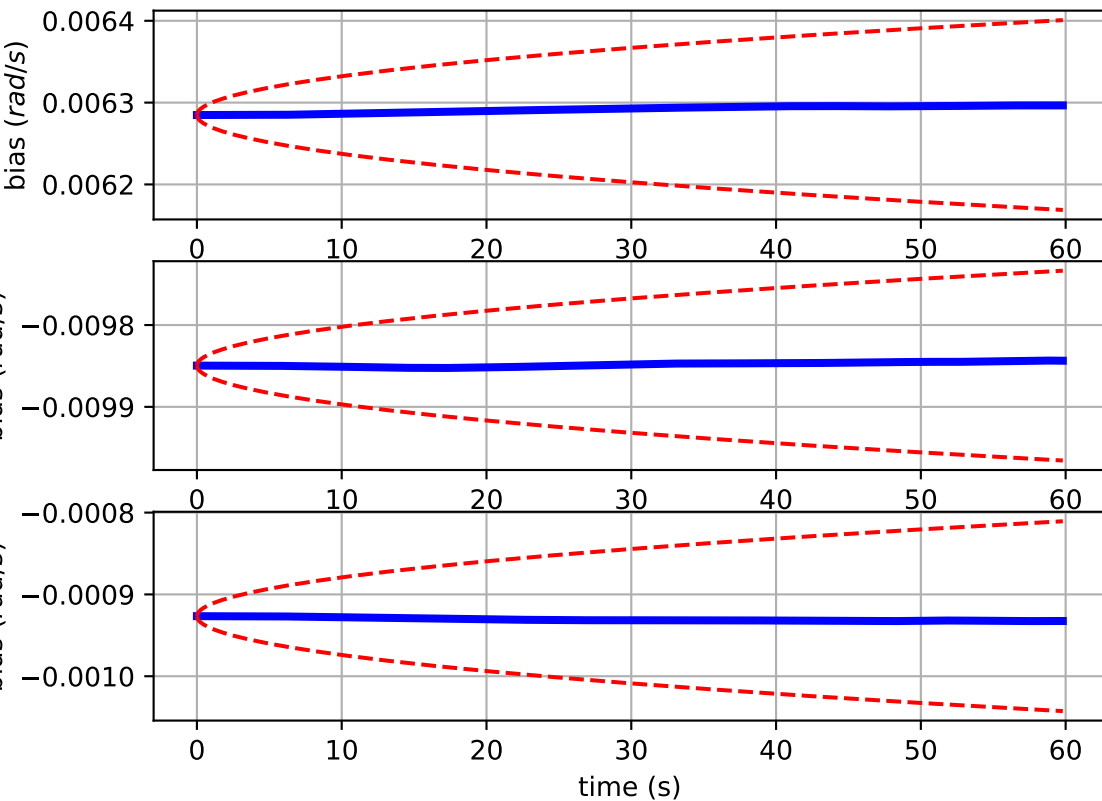
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

