

## Calibration results

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### Normalized Residuals

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Reprojection error (cam0): mean 9.466974084087465, median 8.302235490899584, std: 5.8723173746691435  
Gyroscope error (imu0): mean 1.1142312621184696, median 0.5127992742363966, std: 2.6039985708098135  
Accelerometer error (imu0): mean 1.8539758259598118, median 1.0029731354679399, std: 2.9450628288799643

### Residuals

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Reprojection error (cam0) [px]: mean 9.466974084087465, median 8.302235490899584, std: 5.8723173746691435  
Gyroscope error (imu0) [rad/s]: mean 0.5383106905824974, median 0.24774509639907039, std: 1.258051462551251  
Accelerometer error (imu0) [m/s^2]: mean 6.059378866608809, median 3.2780331521768975, std: 9.625395982124978

### Transformation (cam0):

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T\_ci: (imu0 to cam0):

```
[[ 0.76329129 -0.31445382  0.56436265 -0.06274611]
 [-0.39852385  0.45837819  0.794398   0.0265365 ]
 [-0.50849301 -0.83126905  0.22455873  0.1471095 ]
 [ 0.          0.          0.          1.        ]]
```

T\_ic: (cam0 to imu0):

```
[[-0.76329129 -0.39852385 -0.50849301  0.13327314]
 [-0.31445382  0.45837819 -0.83126905  0.09039306]
 [ 0.56436265  0.794398   0.22455873 -0.0187037 ]
 [ 0.          0.          0.          1.        ]]
```

timeshift cam0 to imu0: [s] (t\_imu = t\_cam + shift)

-0.4358713177838706

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

```
[ 1.84086538 -4.22752875 -8.65491989]
```

## Calibration configuration

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cam0

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Camera model: omni

Focal length: [698.5234866817328, 933.7710684528336]

Principal point: [312.7838774320909, 247.14924625281242]

Omni xi: 0.88840783529277

Distortion model: radtan

Distortion coefficients: [-0.7713012478301775, 0.44168154577123175, -0.0019726569296688087, 0.00763334571725409]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.055 [m]

Spacing 0.0165 [m]

## IMU configuration

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IMU0:

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Model: calibrated

Update rate: 165

Accelerometer:

    Noise density: 0.2544380559809876

    Noise density (discrete): 3.2683160059392042

    Random walk: 3.5305483427796466e-05

Gyroscope:

    Noise density: 0.0376110703852049

    Noise density (discrete): 0.4831229466305012

Random walk: 1.0661945272476883e-06

T\_ib (imu0 to imu0)

[[1, 0, 0, 0]

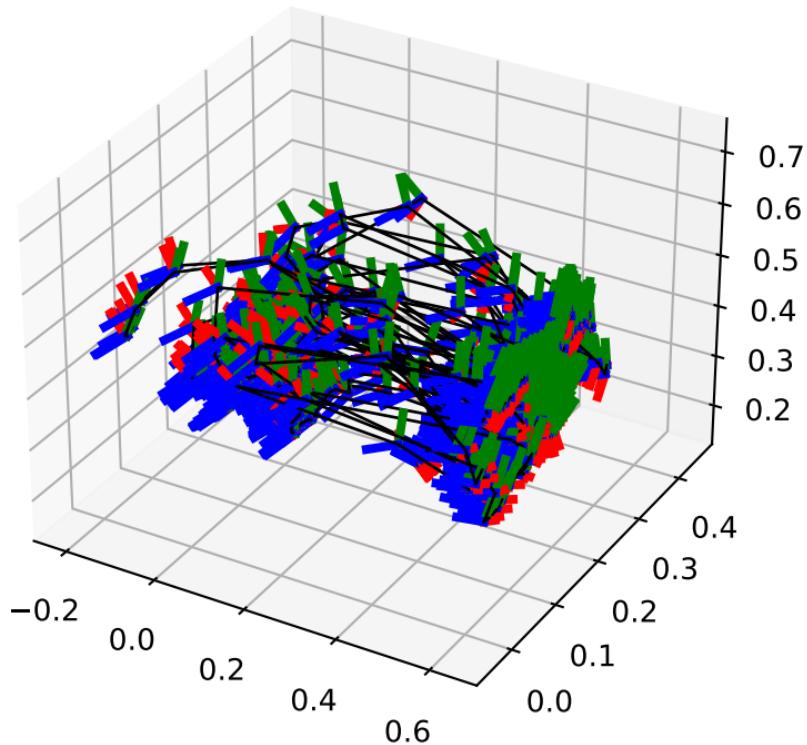
[0, 1, 0, 0]

[0, 0, 1, 0]

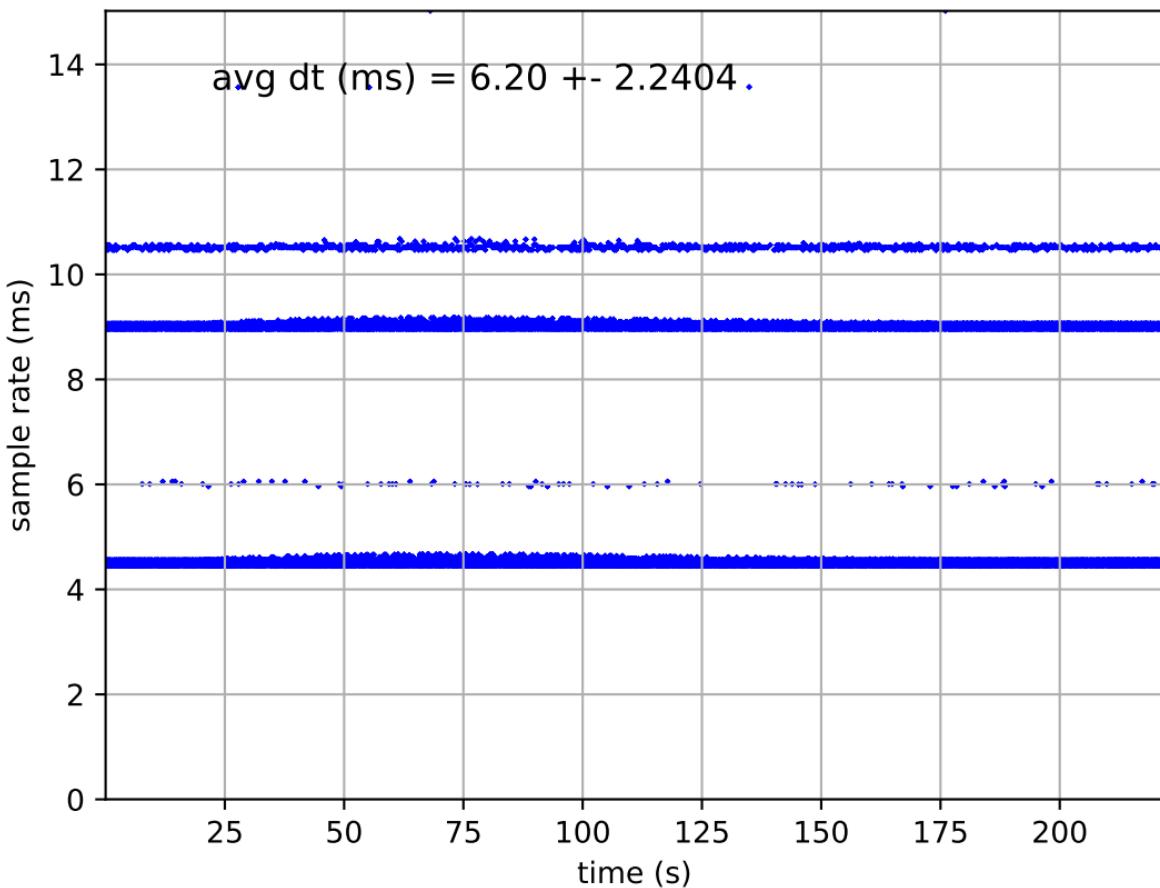
[0, 0, 0, 1]]

time offset with respect to IMU0: 0.0 [s]

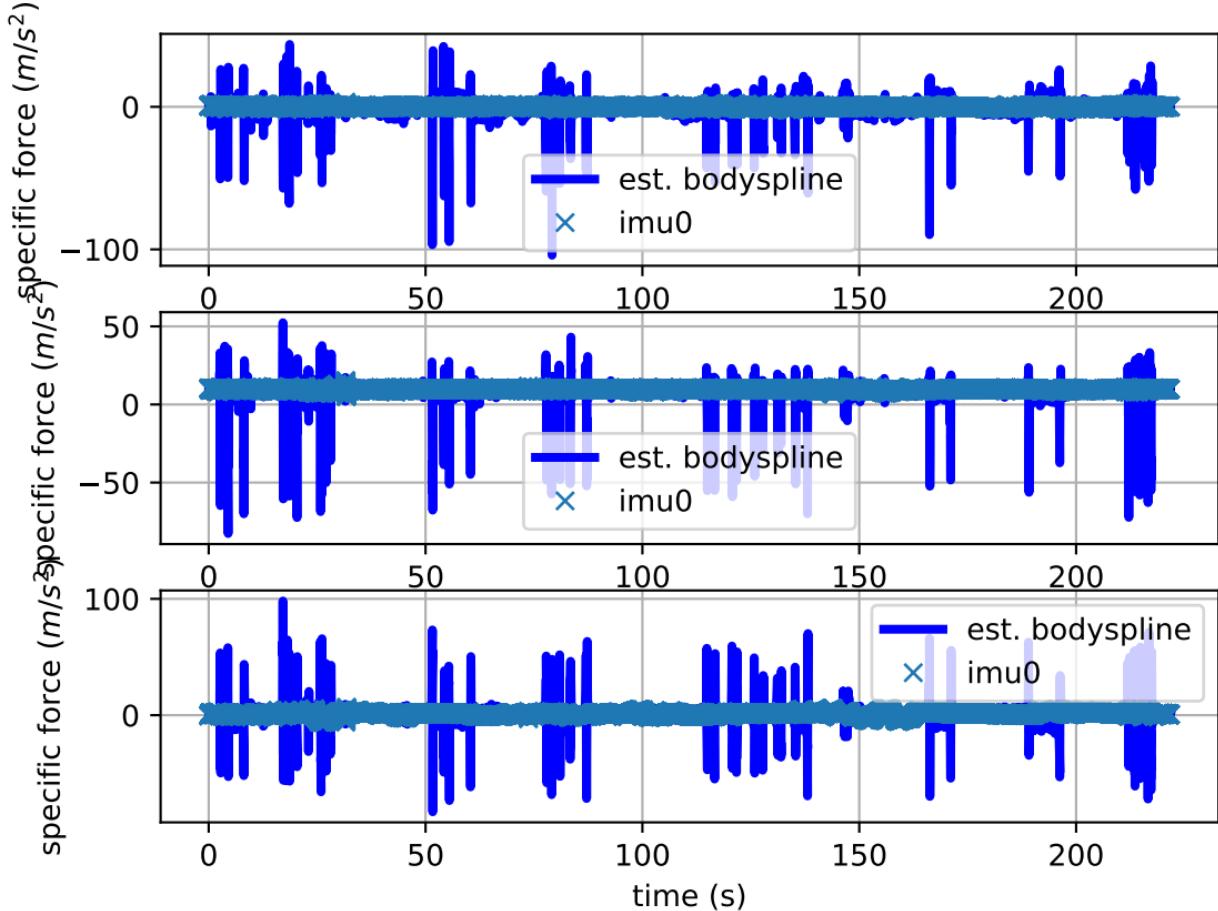
imu0: estimated poses



# imu0: sample inertial rate

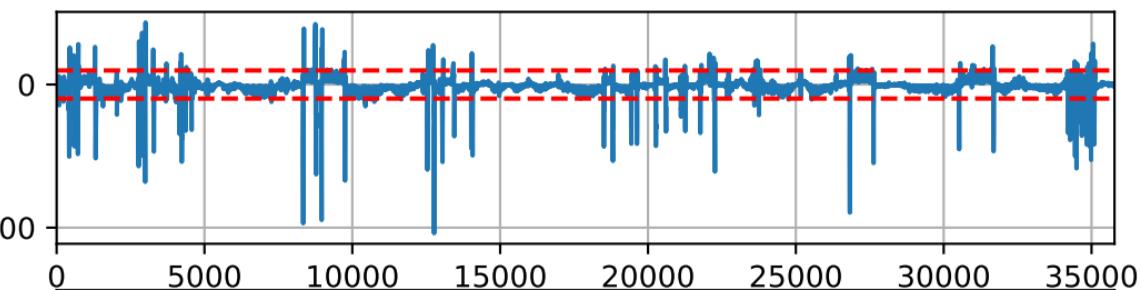


# Comparison of predicted and measured specific force (imu0 frame)

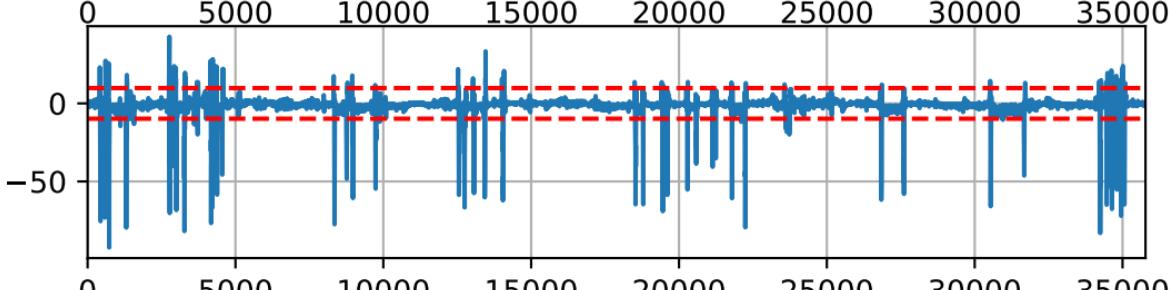


# imu0: acceleration error

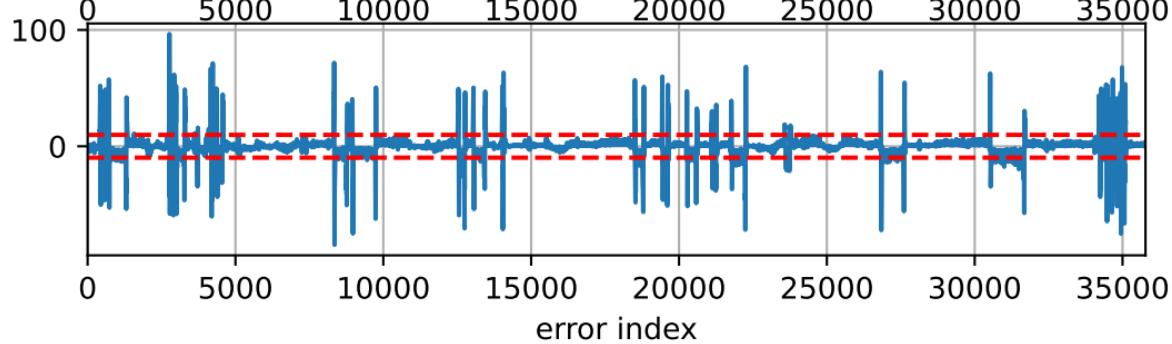
error ( $m/s^2$ )



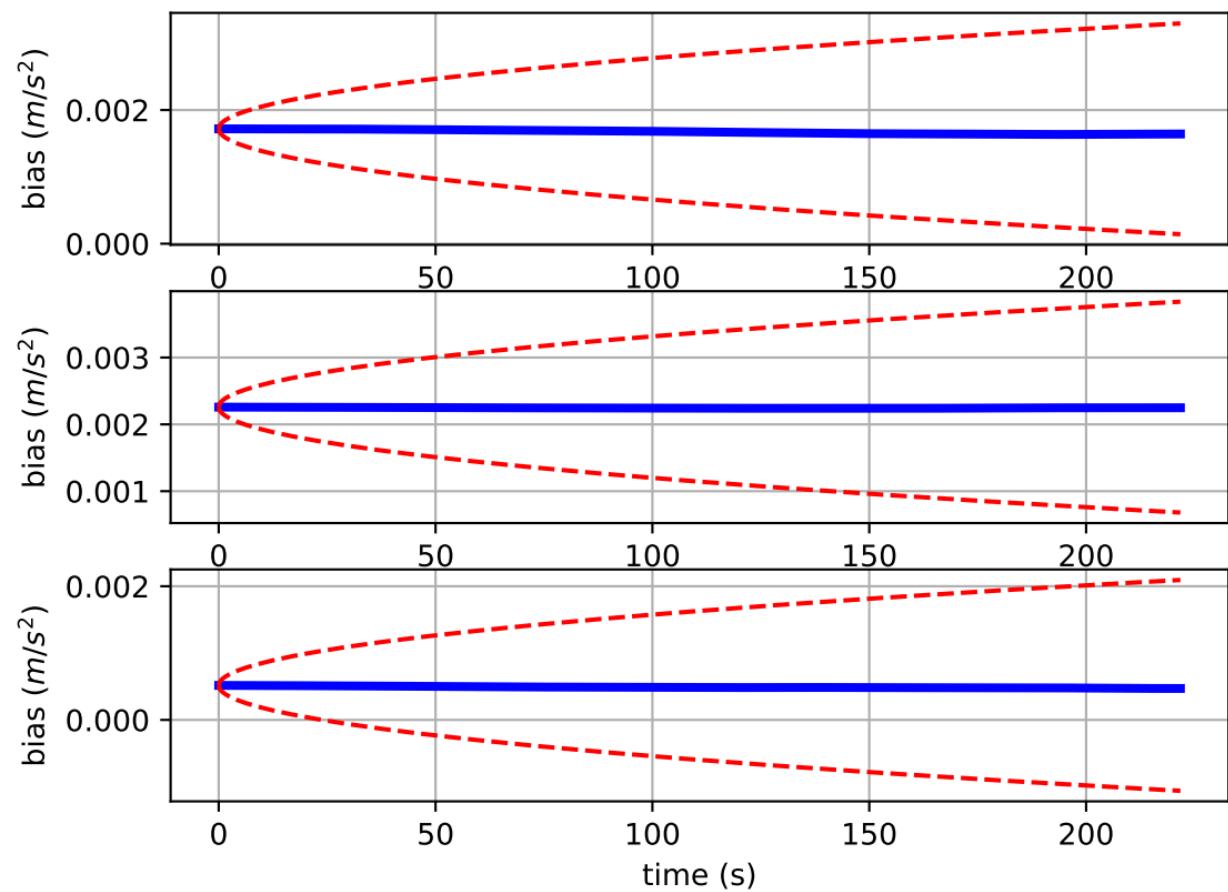
error ( $m/s^2$ )



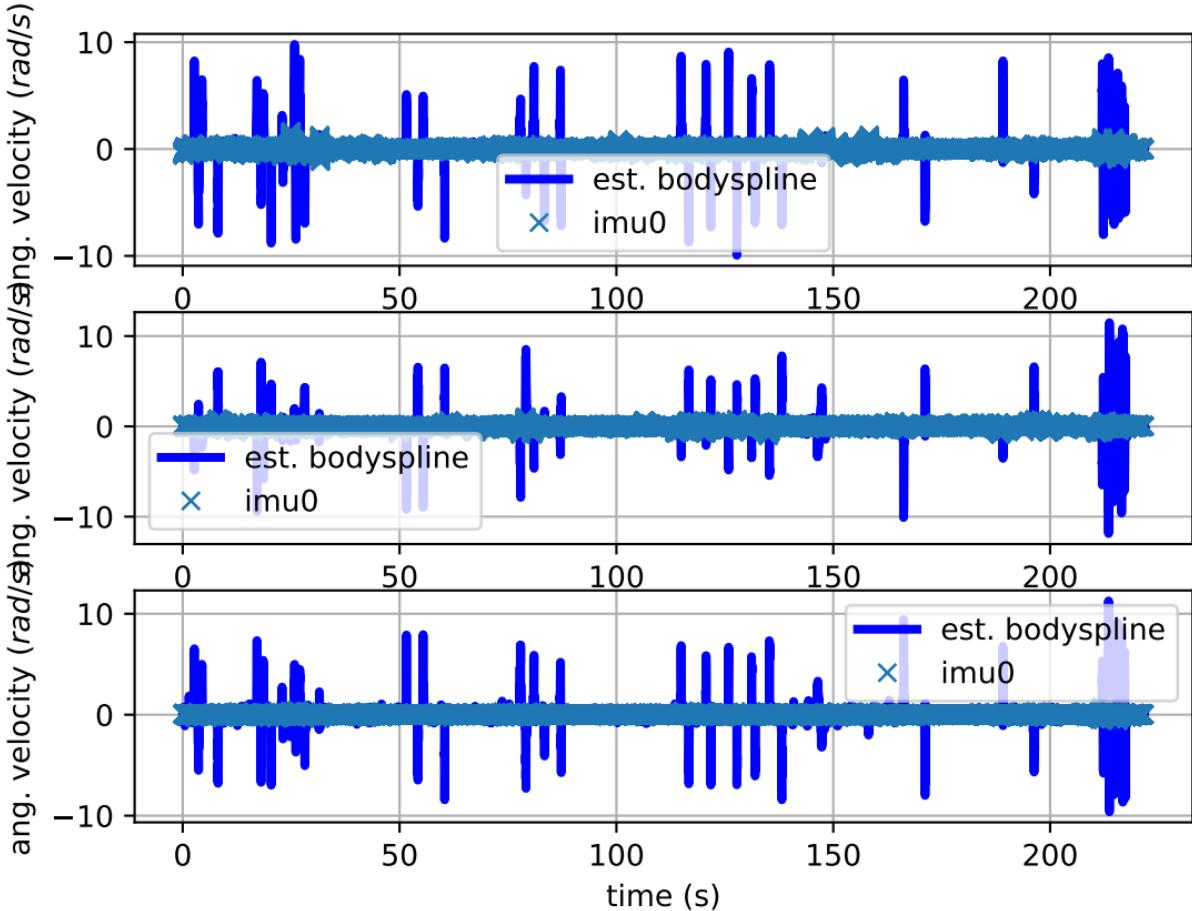
error ( $m/s^2$ )



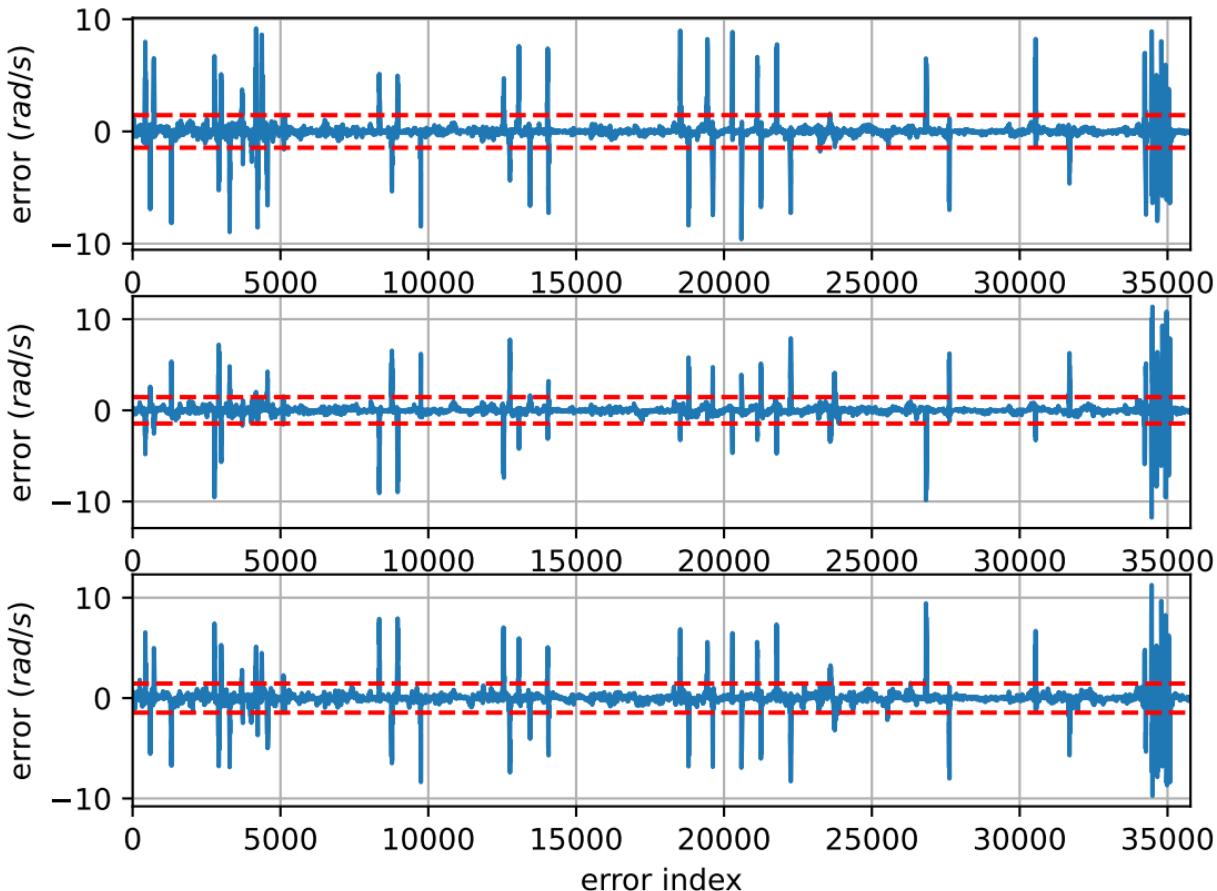
# imu0: estimated accelerometer bias (imu frame)



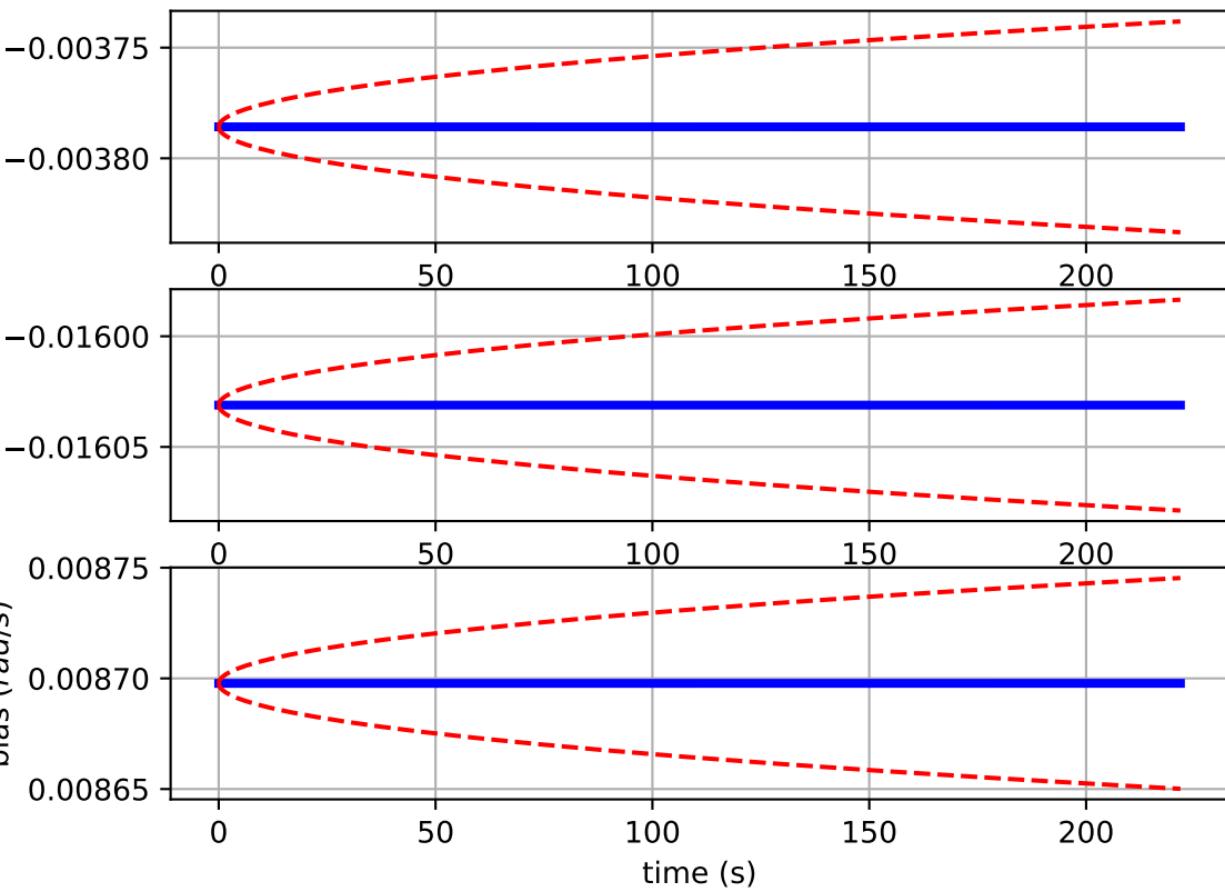
# Comparison of predicted and measured angular velocities (body frame)



# imu0: angular velocities error



# imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

