

## Calibration results

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### Normalized Residuals

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Reprojection error (cam0): mean 0.31735190031688576, median 0.23954324414867684, std: 0.35860082458693765

Gyroscope error (imu0): mean 0.4523148535657254, median 0.3509660736677661, std: 0.35121495923208645

Accelerometer error (imu0): mean 0.4283538867733209, median 0.32878811282784254, std: 0.35550643564767065

### Residuals

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Reprojection error (cam0) [px]: mean 0.31735190031688576, median 0.23954324414867684, std:

0.35860082458693765

Gyroscope error (imu0) [rad/s]: mean 0.0019502131962883344, median 0.0015132350019474285, std:

0.0015143081038101612

Accelerometer error (imu0) [m/s^2]: mean 0.11603709779069502, median 0.08906565243987563, std:

0.09630339845684686

### Transformation (cam0):

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T\_ci: (imu0 to cam0):

[[ 0.50266563 -0.86439517 0.01217614 0.0384167 ]

[-0.00887544 -0.01924442 -0.99977541 -0.03783611]

[ 0.86443536 0.50244467 -0.0173454 -0.08637923]

[ 0. 0. 0. 1. ]]

T\_ic: (cam0 to imu0):

[[ 0.50266563 -0.00887544 0.86443536 0.0550227 ]

[-0.86439517 -0.01924442 0.50244467 0.07587986]

[ 0.01217614 -0.99977541 -0.0173454 -0.03979366]

[ 0. 0. 0. 1. ]]

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

0.0013450414005087806

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

[-0.02685277 -9.73089097 -1.21550927]

## Calibration configuration

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cam0

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Camera model: pinhole  
Focal length: [392.34599636854404, 392.10437756778765]  
Principal point: [319.7463214625791, 247.0890147358629]  
Distortion model: radtan  
Distortion coefficients: [-0.3303435127858308, 0.09749388125740745, -0.00108783661325401,  
-4.242777262535522e-05]  
Type: aprilgrid  
Tags:  
Rows: 6  
Cols: 6  
Size: 0.088 [m]  
Spacing 0.026399999999999996 [m]

## IMU configuration

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IMU0:

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Model: calibrated  
Update rate: 100  
Accelerometer:  
Noise density: 0.027089073164427782  
Noise density (discrete): 0.2708907316442778  
Random walk: 0.0026405437265548015  
Gyroscope:  
Noise density: 0.0004311627577370619  
Noise density (discrete): 0.0043116275773706185  
Random walk: 5.5971879319209416e-05

T\_ib (imu0 to imu0)

[[1. 0. 0. 0.]

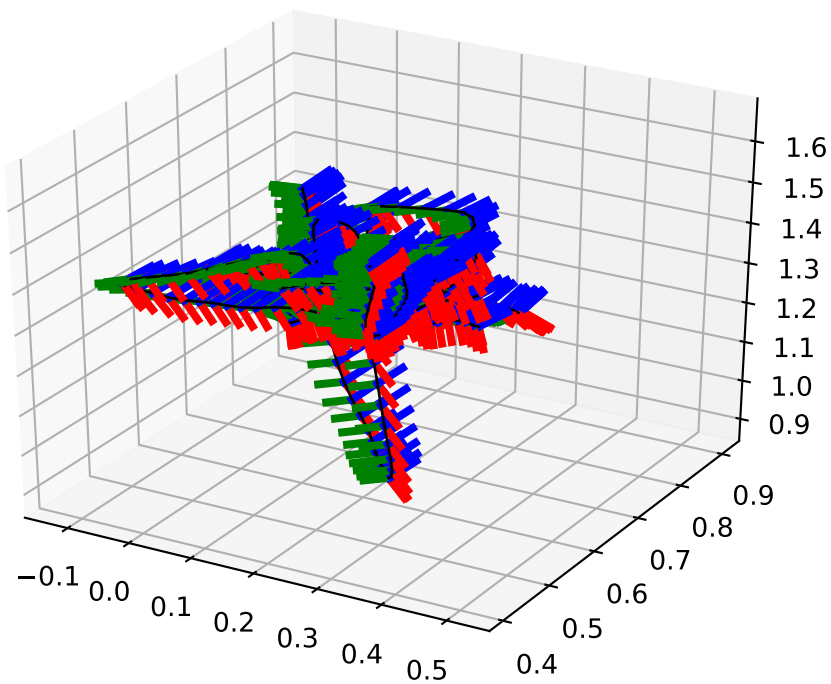
[0. 1. 0. 0.]

[0. 0. 1. 0.]

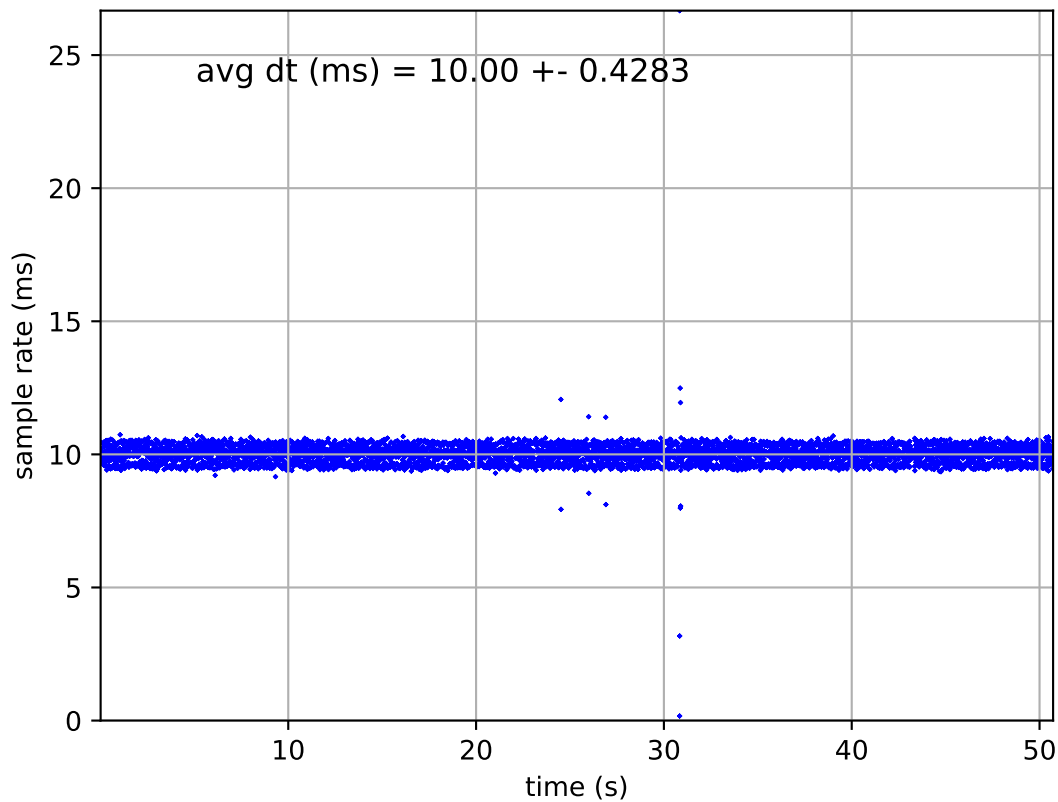
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

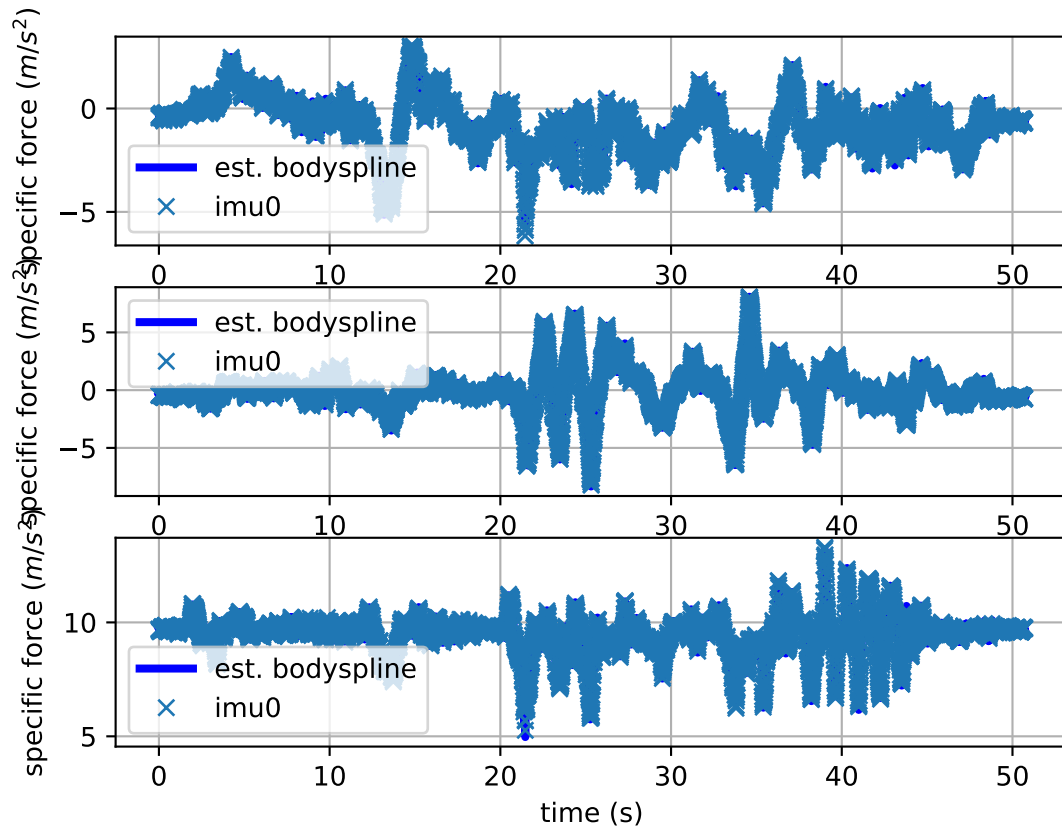
imu0: estimated poses



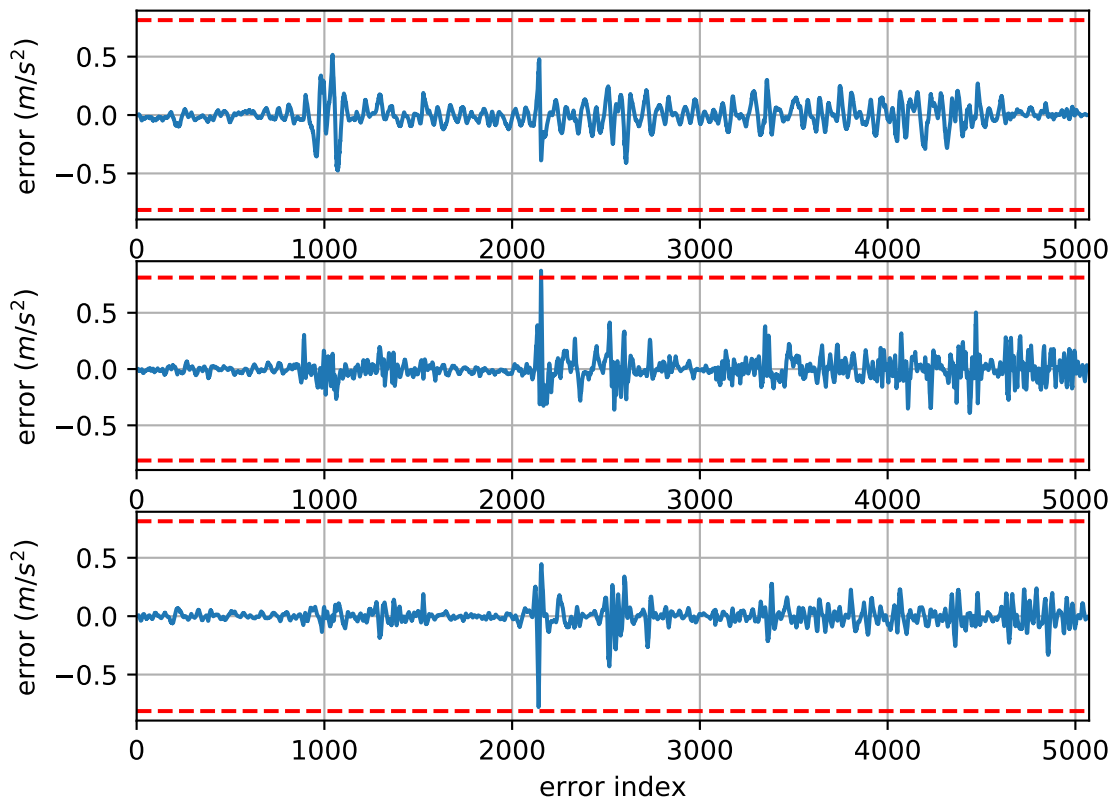
imu0: sample inertial rate



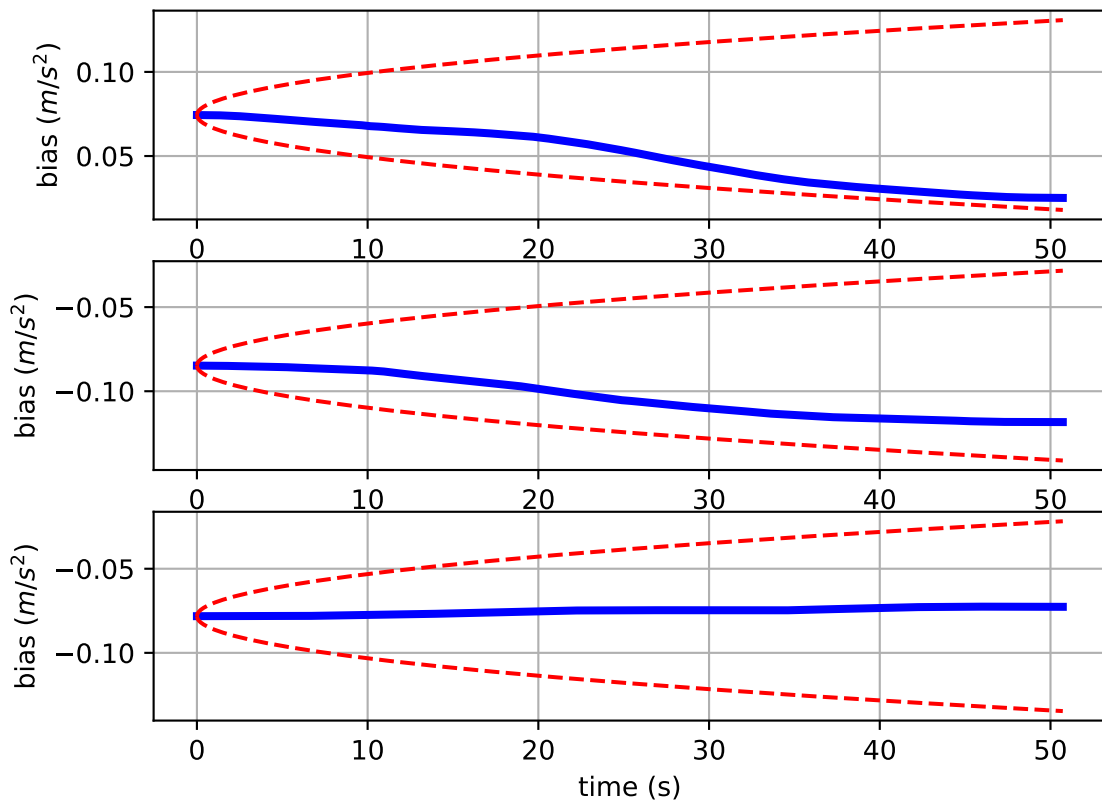
Comparison of predicted and measured specific force (imu0 frame)



imu0: acceleration error

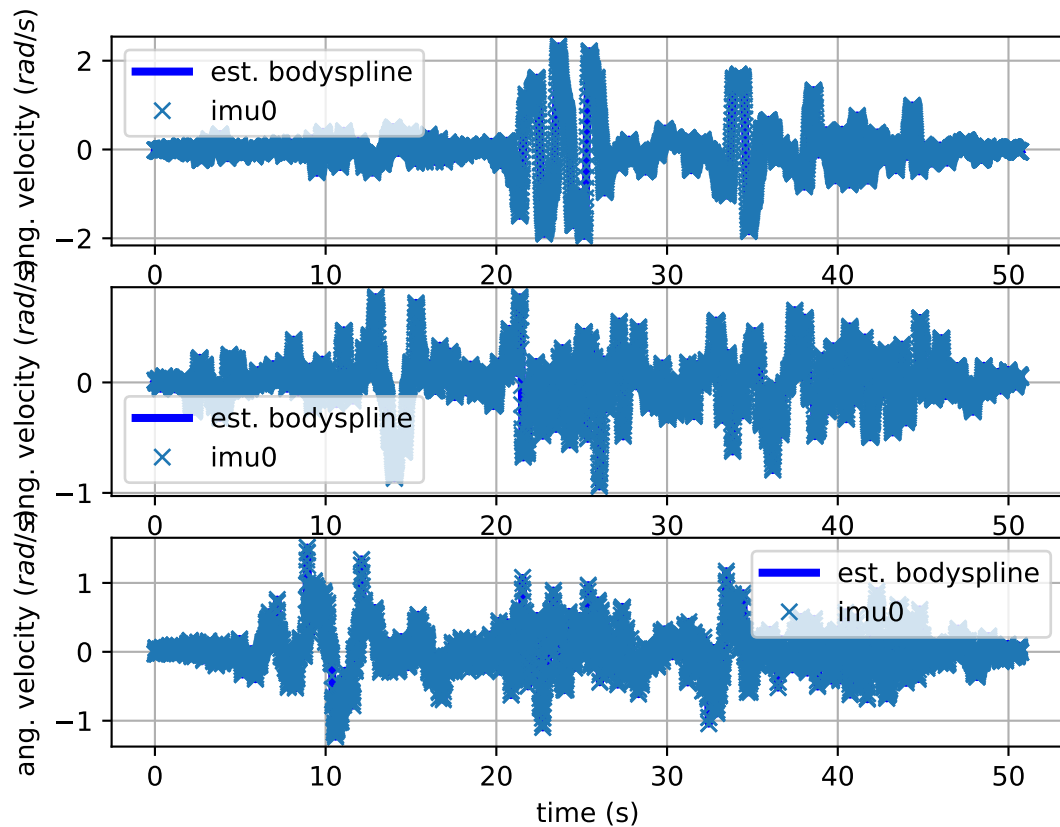


imu0: estimated accelerometer bias (imu frame)

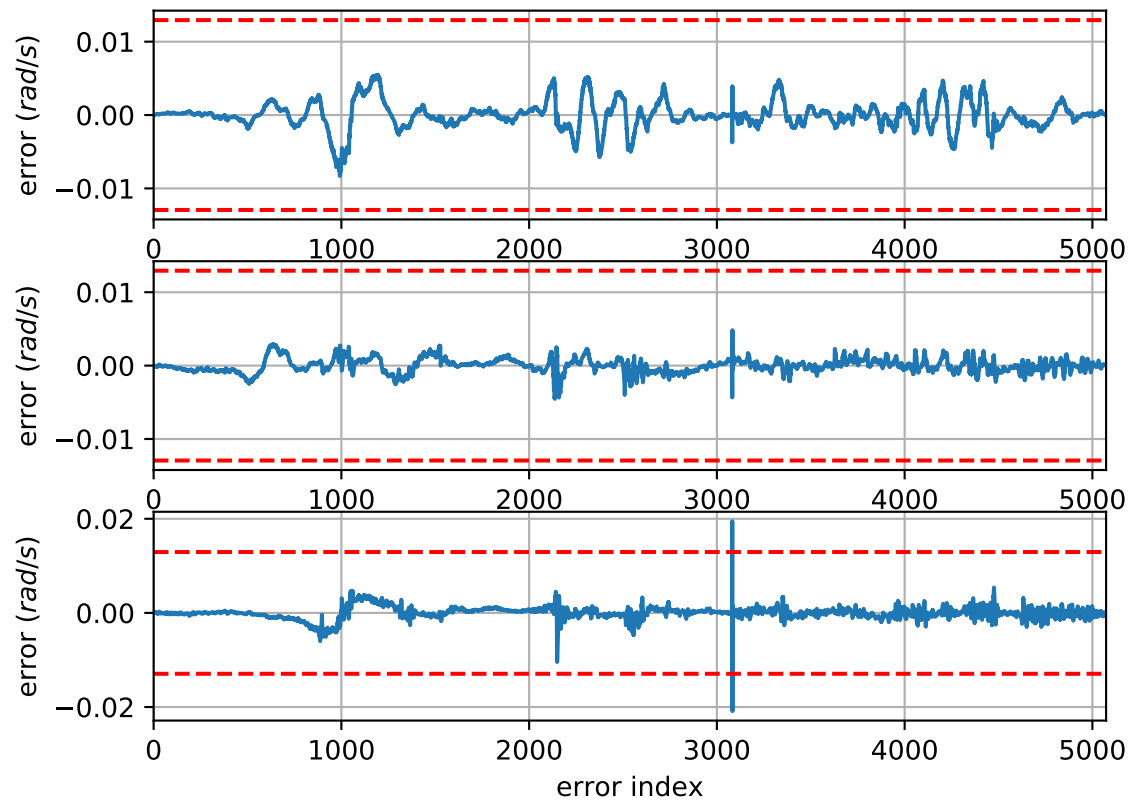




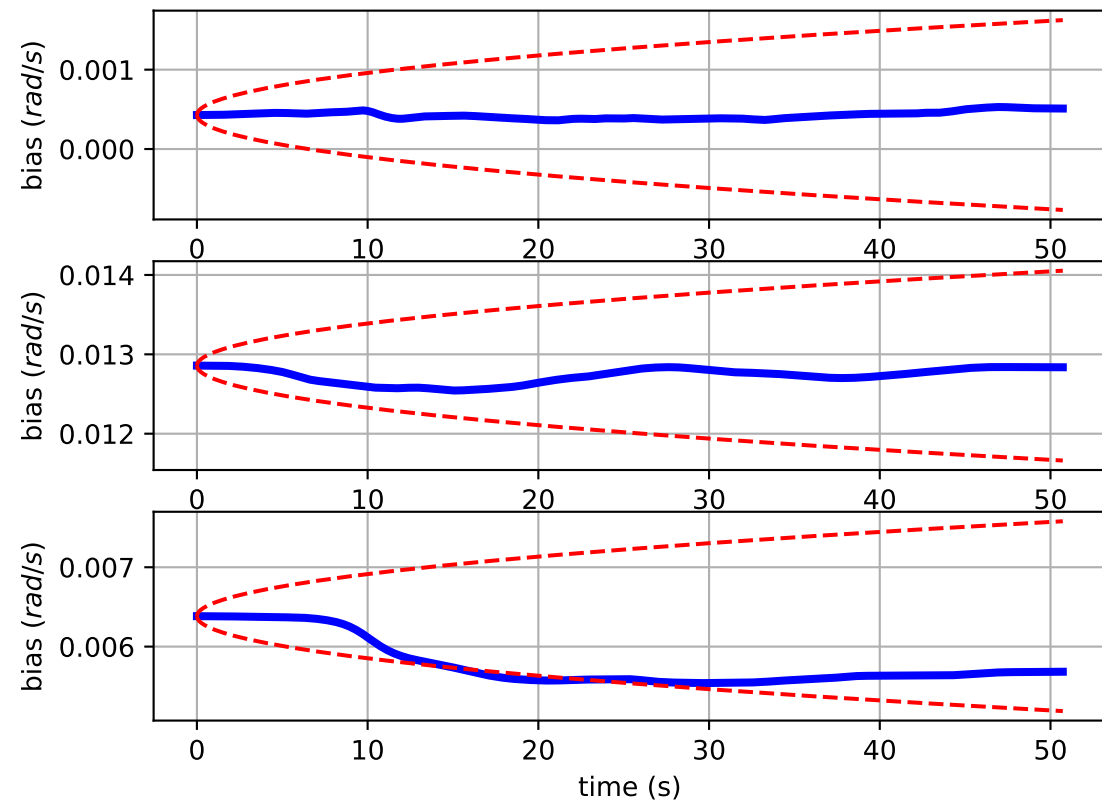
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

