

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.054997871231898095, median 0.05135254767681956, std: 0.029274798252137982
Reprojection error (cam1): mean 0.05383444503767117, median 0.05027564799134793, std: 0.028577319098706446
Gyroscope error (imu0): mean 0.08242606806276007, median 0.06080148701186294, std: 0.07482203761628177
Accelerometer error (imu0): mean 0.09098084352420513, median 0.07519229086498588, std: 0.062453558058318044

Residuals

Reprojection error (cam0) [px]: mean 0.054997871231898095, median 0.05135254767681956, std: 0.029274798252137982
Reprojection error (cam1) [px]: mean 0.05383444503767117, median 0.05027564799134793, std: 0.028577319098706446
Gyroscope error (imu0) [rad/s]: mean 0.002819145457544534, median 0.0020795391549058772, std: 0.0025590715707749095
Accelerometer error (imu0) [m/s^2]: mean 0.03177283527493635, median 0.026259069261791283, std: 0.021810378269274785

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[-0.00749832 -0.99990529 -0.01154021  0.0138436 ]  
[-0.00154001  0.01155207 -0.99993209 -0.06122337]  
[ 0.9999707 -0.00748004 -0.00162649 -0.06143837]  
[ 0.          0.          1.          ]]
```

T_ic: (cam0 to imu0):

```
[[-0.00749832 -0.00154001  0.9999707  0.06144609]  
[-0.99990529  0.01155207 -0.00748004  0.01408999]  
[-0.01154021 -0.99993209 -0.00162649 -0.06115938]  
[ 0.          0.          1.          ]]
```

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

-0.003428892437642515

Transformation (cam1):

T_ci: (imu0 to cam1):
[[-0.00584992 -0.99991533 -0.01162374 -0.03624604]
[-0.00160023 0.01163328 -0.99993105 -0.06117244]
[0.99998161 -0.00583092 -0.00166815 -0.06164251]
[0. 0. 0. 1.]]

T_ic: (cam1 to imu0):
[[-0.00584992 -0.00160023 0.99998161 0.06133145]
[-0.99991533 0.01163328 -0.00583092 -0.03589077]
[-0.01162374 -0.99993105 -0.00166815 -0.06169237]
[0. 0. 0. 1.]]

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
-0.003427367469498639

Baselines:

Baseline (cam0 to cam1):
[[0.9999864 0.00008086 0.00164856 -0.04998339]
[-0.00008076 0.99999999 -0.00006083 0.00004831]
[-0.00164856 0.00006069 0.99999864 -0.00017769]
[0. 0. 0. 1.]]
baseline norm: 0.04998372745836909 [m]

Gravity vector in target coords: [m/s^2]
[0.0551369 -9.62430881 -1.88097388]

Calibration configuration

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cam0

Camera model: pinhole
Focal length: [419.74891374339705, 420.08253248781205]
Principal point: [424.9032193271213, 240.27448802537762]
Distortion model: radtan
Distortion coefficients: [0.0028474342199780946, -0.004751749746236711, -0.0002868834242260207,
0.0009000649924908969]
Type: checkerboard
Rows
Count: 11
Distance: 0.02 [m]
Cols
Count: 8
Distance: 0.02 [m]

cam1

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Camera model: pinhole
Focal length: [419.74349142338673, 420.10618156355673]
Principal point: [423.9957532183049, 240.3206318704239]
Distortion model: radtan
Distortion coefficients: [0.0020684321873519146, -0.004451069393662058, -0.00032683963392714596,
0.0002944097699636075]
Type: checkerboard
Rows
Count: 11
Distance: 0.02 [m]
Cols
Count: 8
Distance: 0.02 [m]

IMU configuration

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IMU0:

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Model: calibrated

Update rate: 200.0

Accelerometer:

Noise density: 0.02469397557789561

Noise density (discrete): 0.3492255517116996

Random walk: 0.00026613450113975324

Gyroscope:

Noise density: 0.0024184544004491014

Noise density (discrete): 0.03420211013096011

Random walk: 4.52857120638716e-05

T_ib (imu0 to imu0)

[[1. 0. 0. 0.]

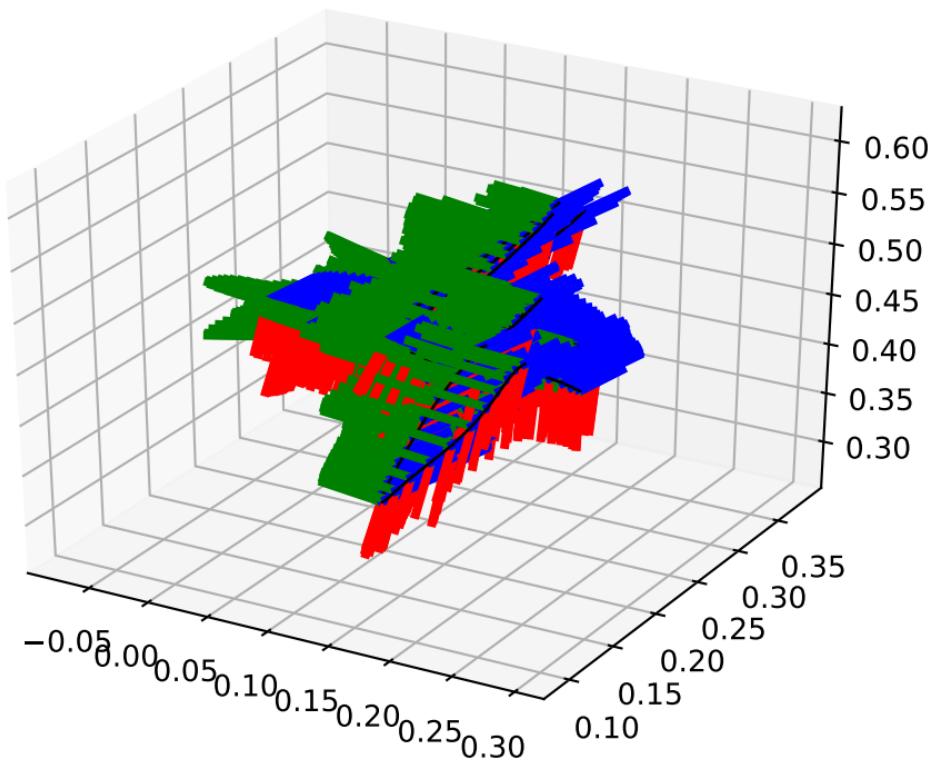
[0. 1. 0. 0.]

[0. 0. 1. 0.]

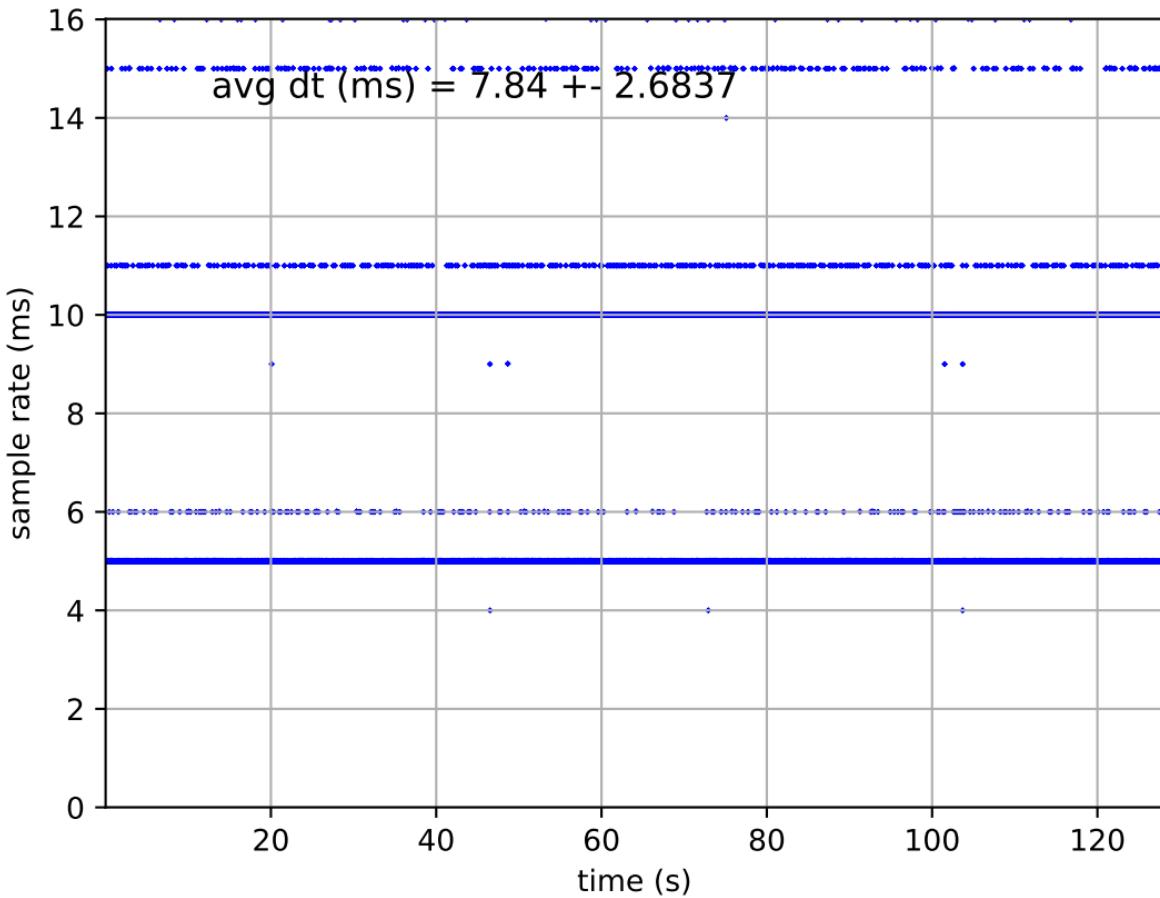
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

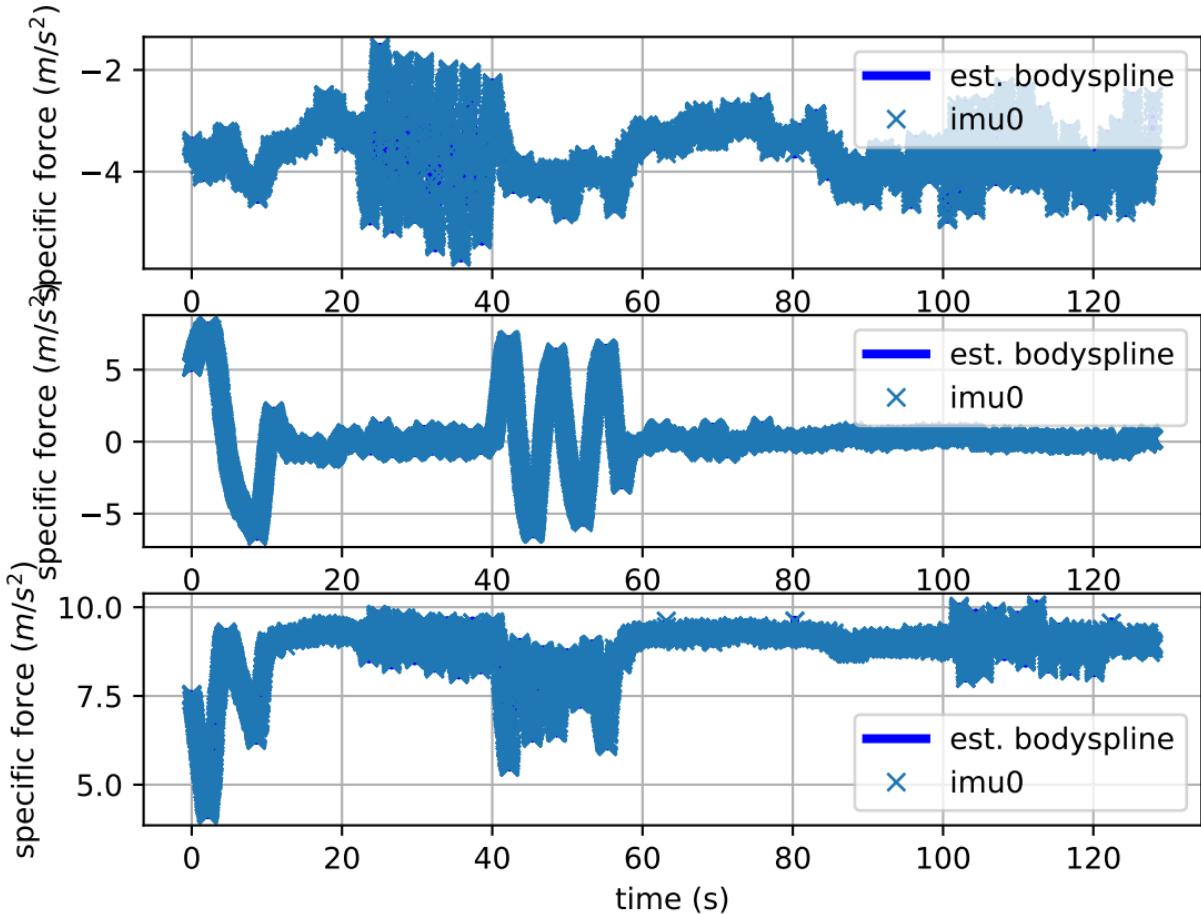
imu0: estimated poses



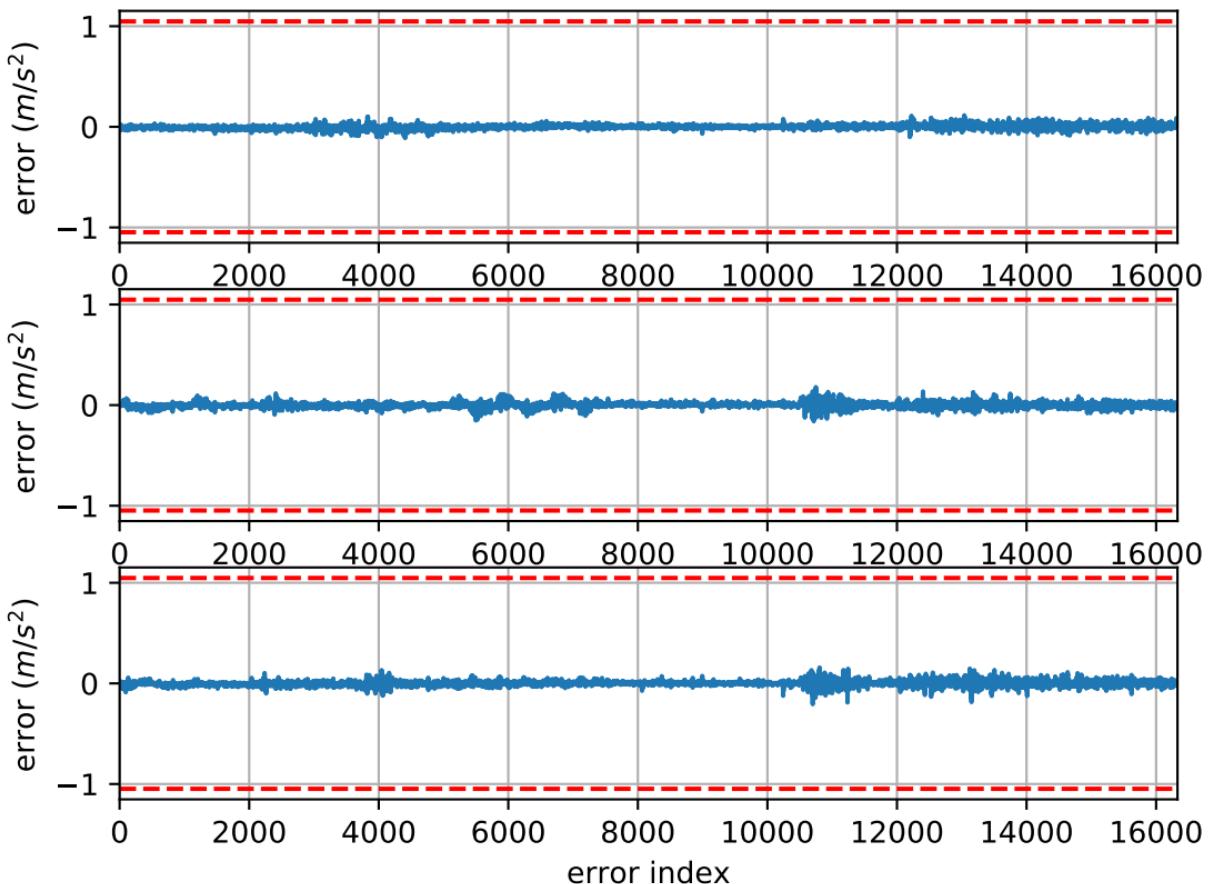
imu0: sample inertial rate



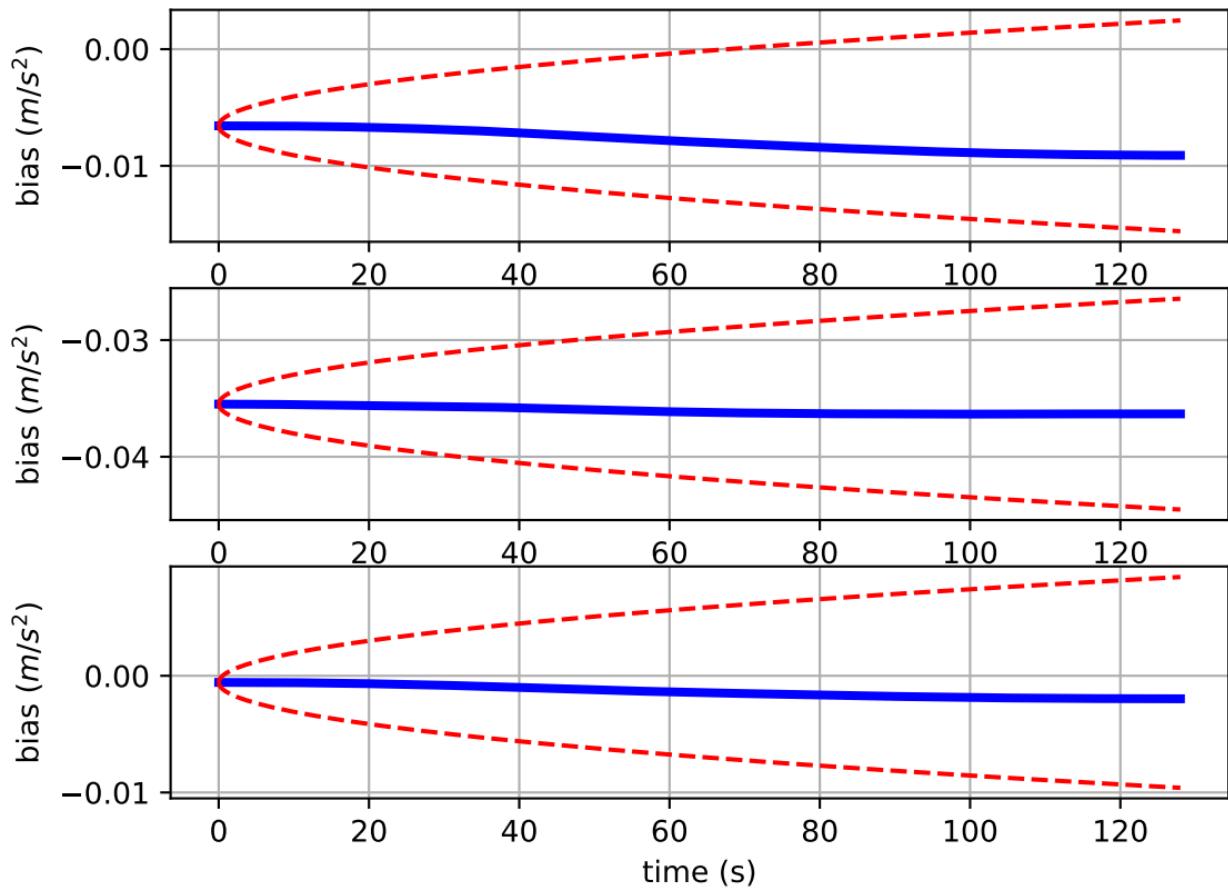
Comparison of predicted and measured specific force (imu0 frame)



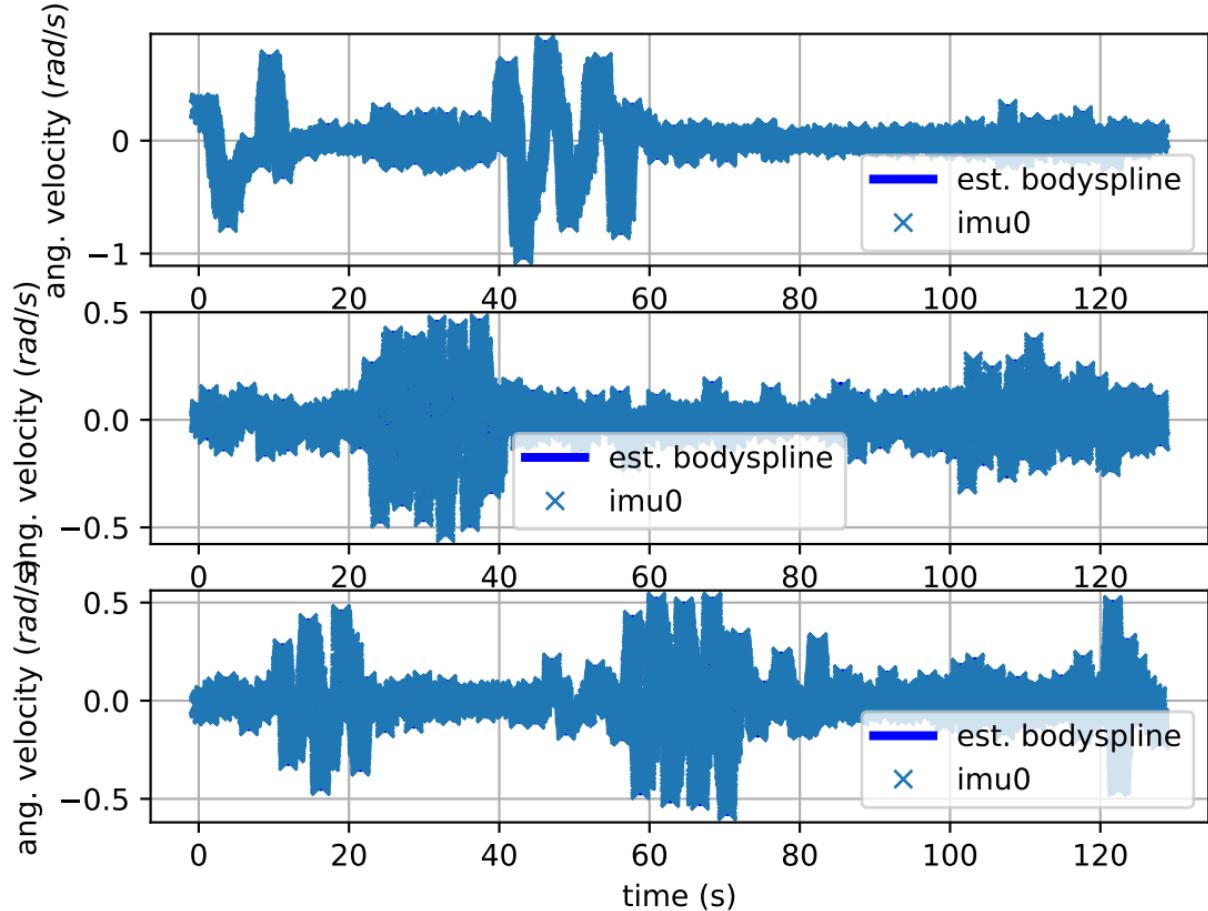
imu0: acceleration error



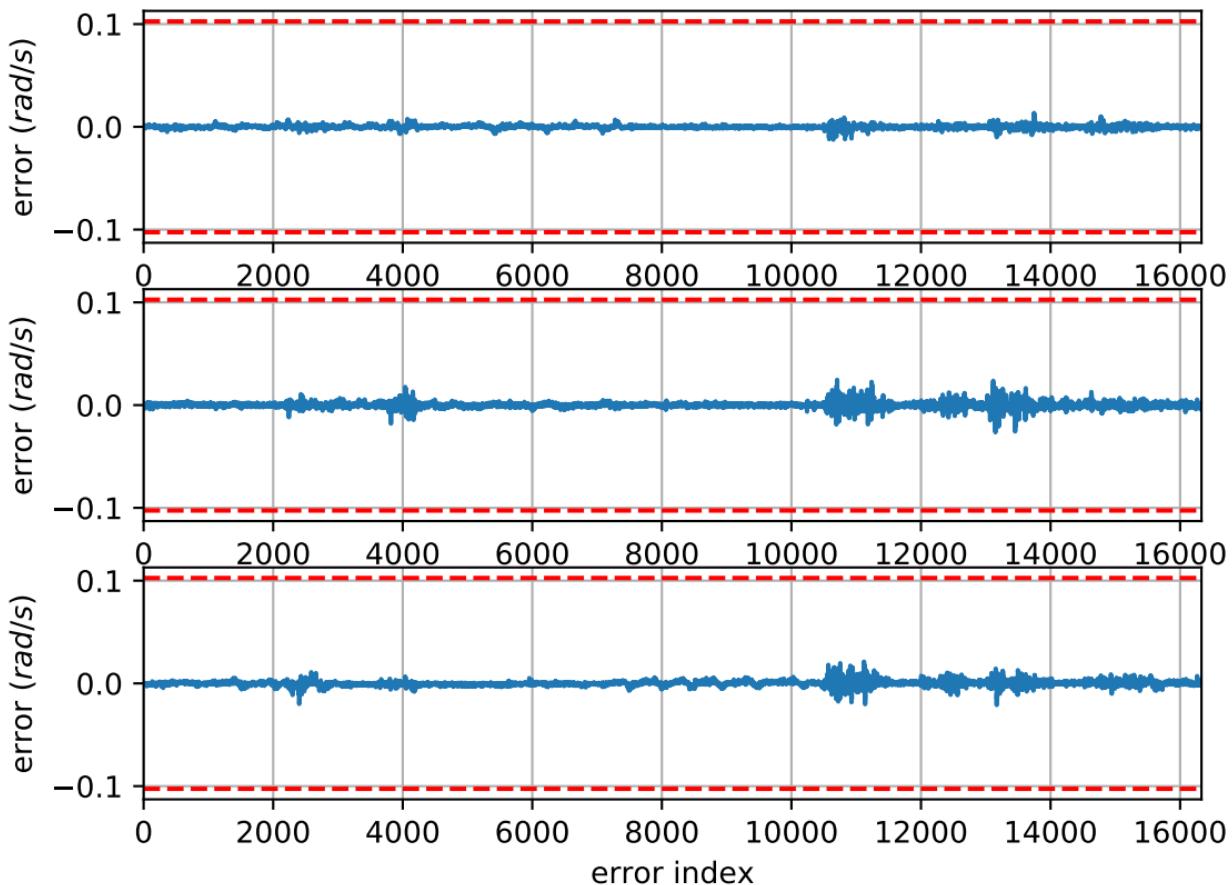
imu0: estimated accelerometer bias (imu frame)



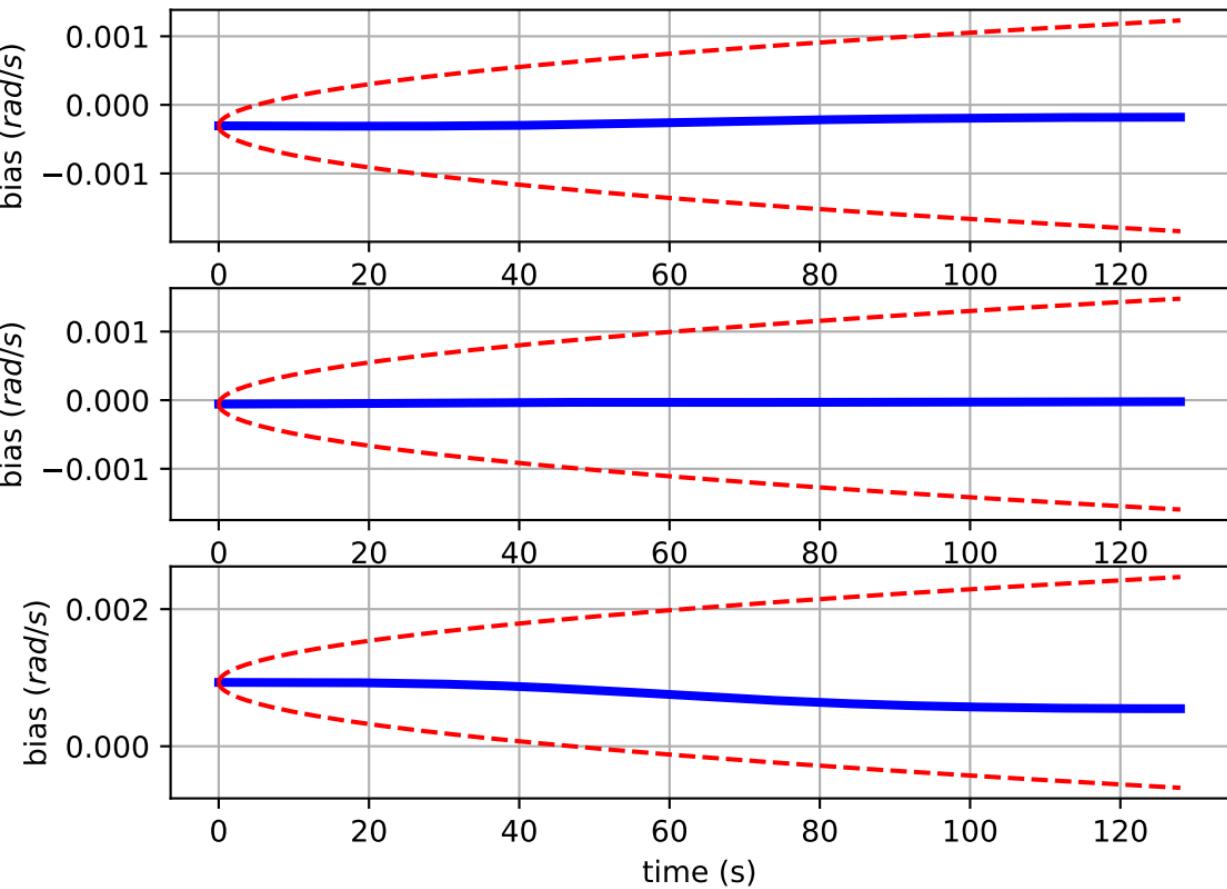
Comparison of predicted and measured angular velocities (body frame)



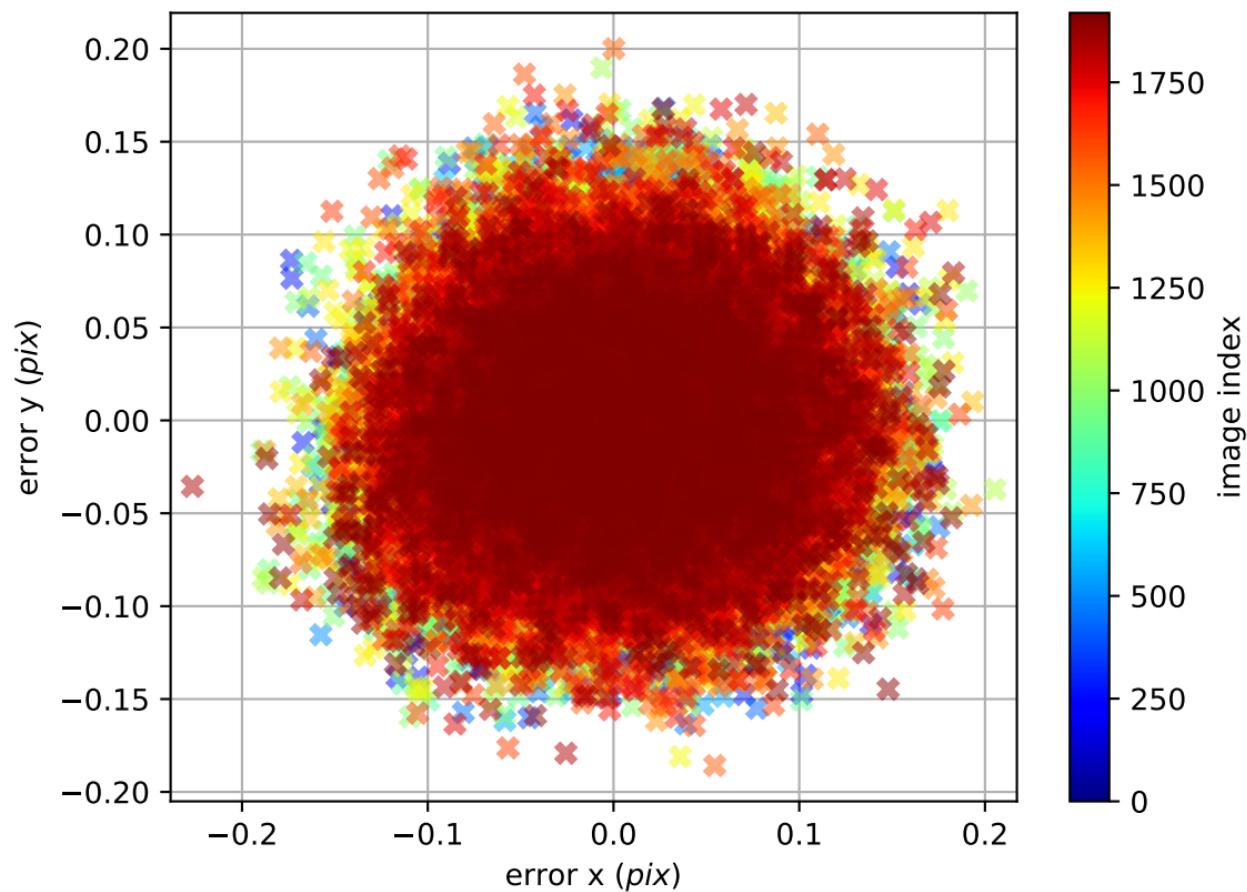
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

