

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.3247277932538459, median 0.2916905351465746, std: 0.19594931297120952
Reprojection error (cam1): mean 0.30889248994364593, median 0.28054366891442467, std: 0.18015999951661835
Gyroscope error (imu0): mean 1.2138283759757071, median 1.0527358538990144, std: 0.8904106364627837
Accelerometer error (imu0): mean 1.47744029812195, median 1.1881205820340868, std: 1.7299014453821717

Residuals

Reprojection error (cam0) [px]: mean 0.3247277932538459, median 0.2916905351465746, std: 0.19594931297120952
Reprojection error (cam1) [px]: mean 0.30889248994364593, median 0.28054366891442467, std:
0.18015999951661835
Gyroscope error (imu0) [rad/s]: mean 0.008393769552134821, median 0.0072797953415739275, std:
0.00615729689399507
Accelerometer error (imu0) [m/s^2]: mean 0.06461856449882297, median 0.051964635430711434, std:
0.07566041637494864

Transformation (cam0):

T_ci: (imu0 to cam0):
[[0.00144009 -0.99999896 -0.00010568 0.05729055]
[0.99999799 0.00143994 0.00139712 0.01599082]
[-0.00139696 -0.00010769 0.99999902 -0.00402891]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):
[[0.00144009 0.99999799 -0.00139696 -0.01607892]
[-0.99999896 0.00143994 -0.00010769 0.05726703]
[-0.00010568 0.00139712 0.99999902 0.00401262]
[0. 0. 0. 1.]]

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)
-0.0002869470996236527

Transformation (cam1):

T_ci: (imu0 to cam1):
[[0.00147484 -0.99999891 0.00009001 -0.01767798]
[0.99999481 0.00147509 0.00286472 0.01638863]
[-0.00286485 0.00008579 0.99999589 -0.00467414]
[0. 0. 0. 1.]]

T_ic: (cam1 to imu0):
[[0.00147484 0.99999481 -0.00286485 -0.01637586]
[-0.99999891 0.00147509 0.00008579 -0.01770174]
[0.00009001 0.00286472 0.99999589 0.00462877]
[0. 0. 0. 1.]]

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)
-0.0002977136917737526

Baselines:

Baseline (cam0 to cam1):
[[0.99999998 0.00003502 0.00019565 -0.0749683]
[-0.00003531 0.99999892 0.0014676 0.00040576]
[-0.0001956 -0.00146761 0.9999989 -0.00061056]
[0. 0. 0. 1.]]
baseline norm: 0.07497188917497699 [m]

Gravity vector in target coords: [m/s^2]
[9.67753806 -0.16724768 -1.57661291]

Calibration configuration

=====

cam0

Camera model: pinhole
Focal length: [405.05676512574996, 405.2485063342071]
Principal point: [309.1642124567049, 202.07247963486338]
Distortion model: radtan
Distortion coefficients: [-0.007088315654521242, -0.03373663281597948, -0.003584658182054242,
0.0005339778738070514]
Type: aprilgrid
Tags:
Rows: 3
Cols: 3
Size: 0.05 [m]
Spacing 0.010000000000000002 [m]

cam1

=====

Camera model: pinhole
Focal length: [404.43888059947176, 404.6914098934126]
Principal point: [309.32163876812183, 201.27035965193335]
Distortion model: radtan
Distortion coefficients: [0.01012495284492201, -0.05534845042962153, -0.0014582643199337248,
0.0007926650110993373]
Type: aprilgrid
Tags:
Rows: 3
Cols: 3
Size: 0.05 [m]
Spacing 0.010000000000000002 [m]

IMU configuration

=====

IMU0:

Model: calibrated
Update rate: 400.0

Accelerometer:

Noise density: 0.002186841816246753

Noise density (discrete): 0.04373683632493506

Random walk: 0.0003813200687038481

Gyroscope:

Noise density: 0.0003457560277163437

Noise density (discrete): 0.006915120554326874

Random walk: 1.2359539694598483e-05

T_ib (imu0 to imu0)

[[1. 0. 0. 0.]

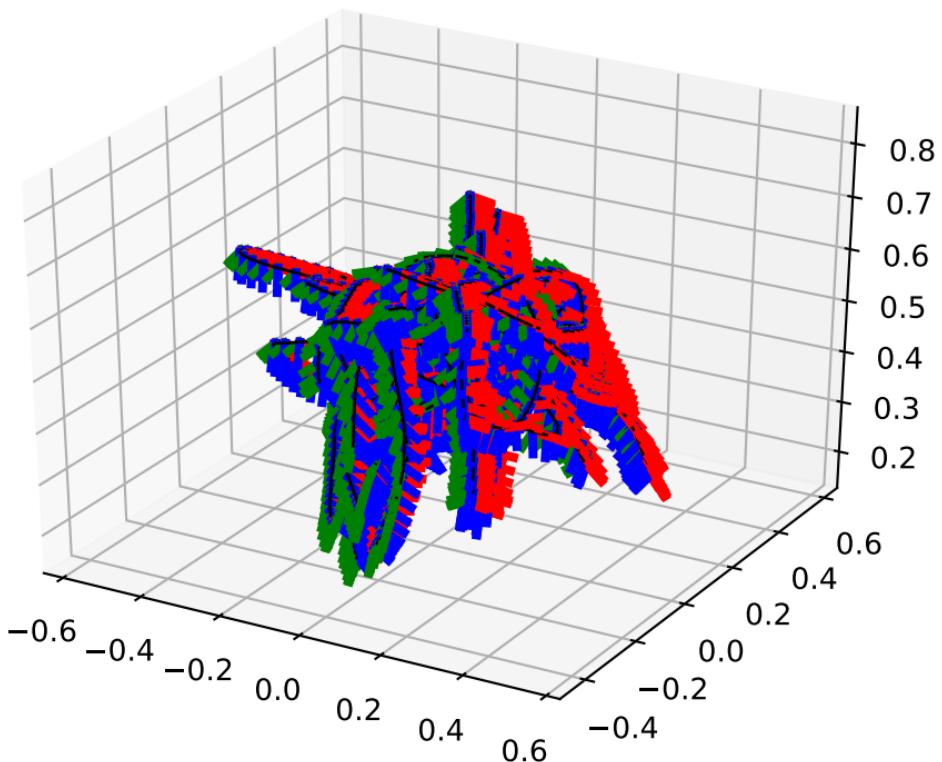
[0. 1. 0. 0.]

[0. 0. 1. 0.]

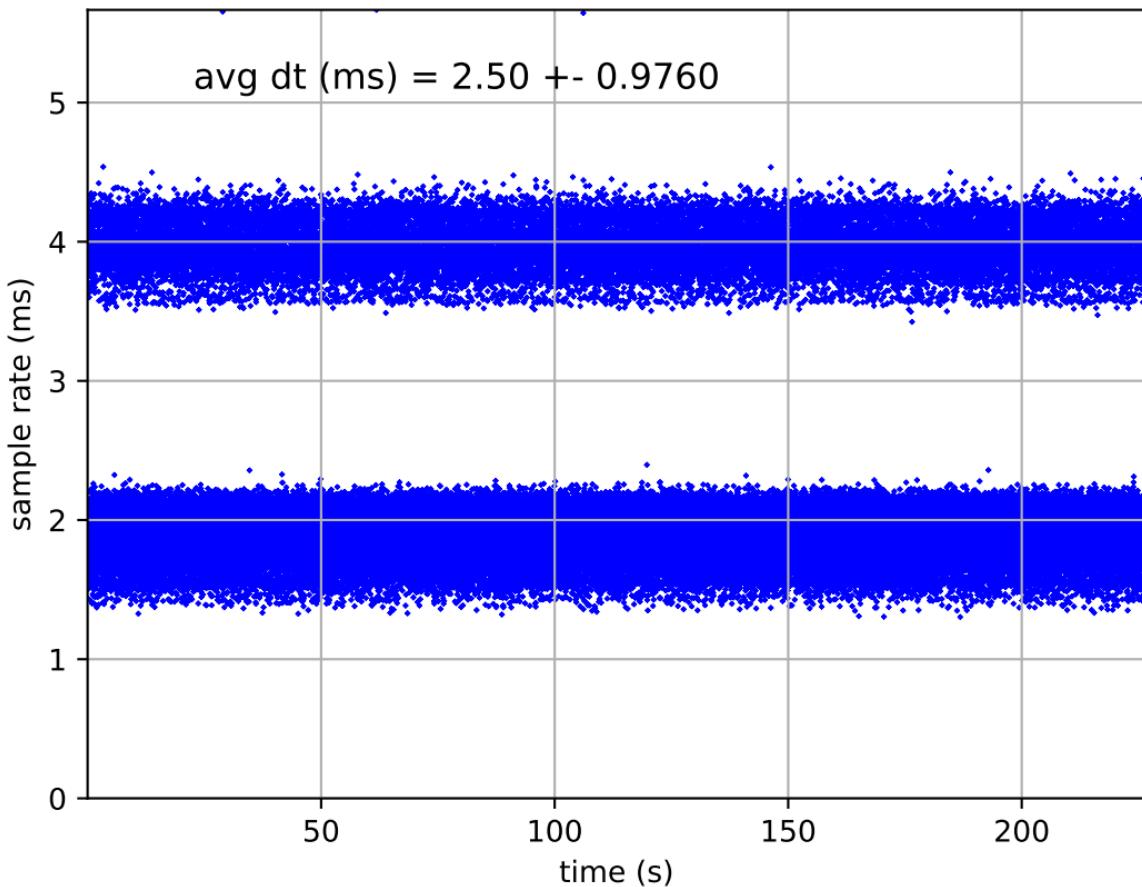
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

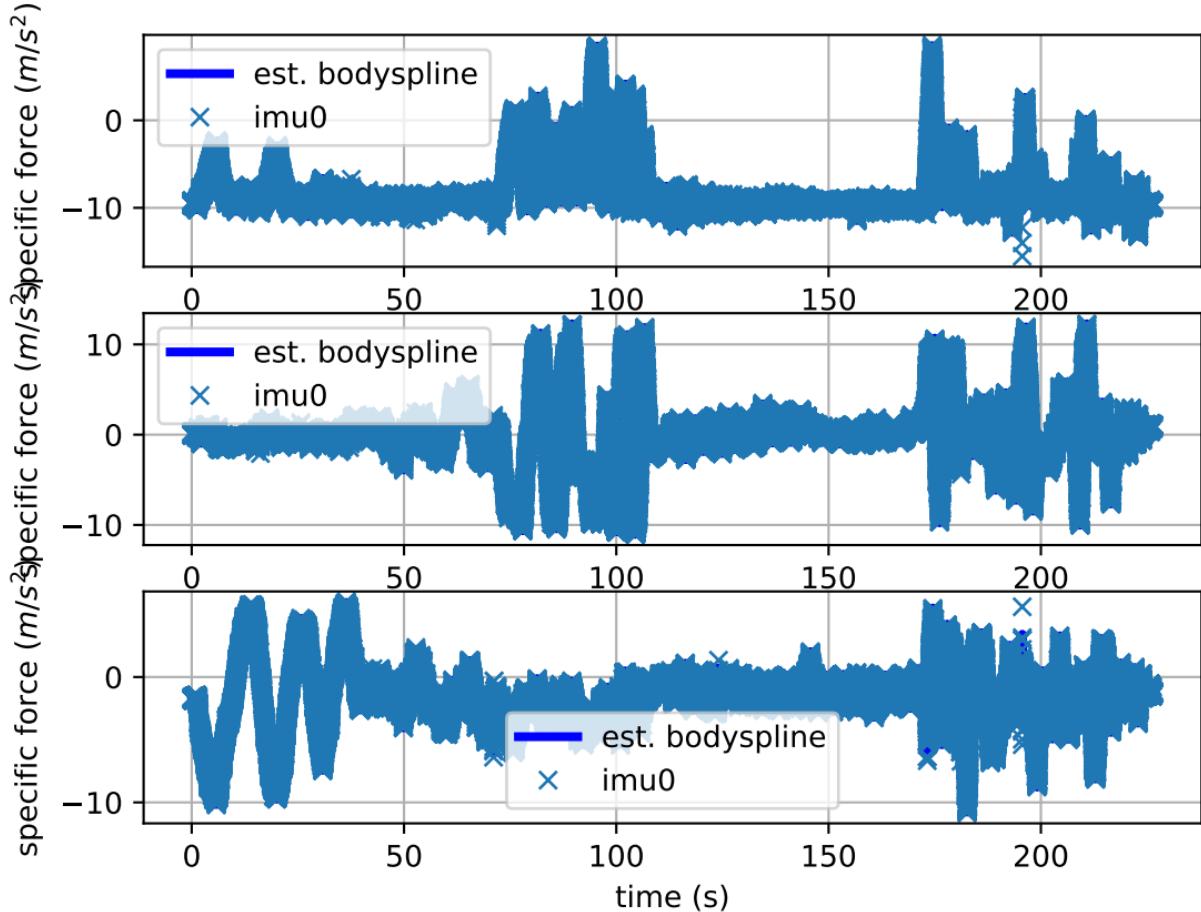
imu0: estimated poses



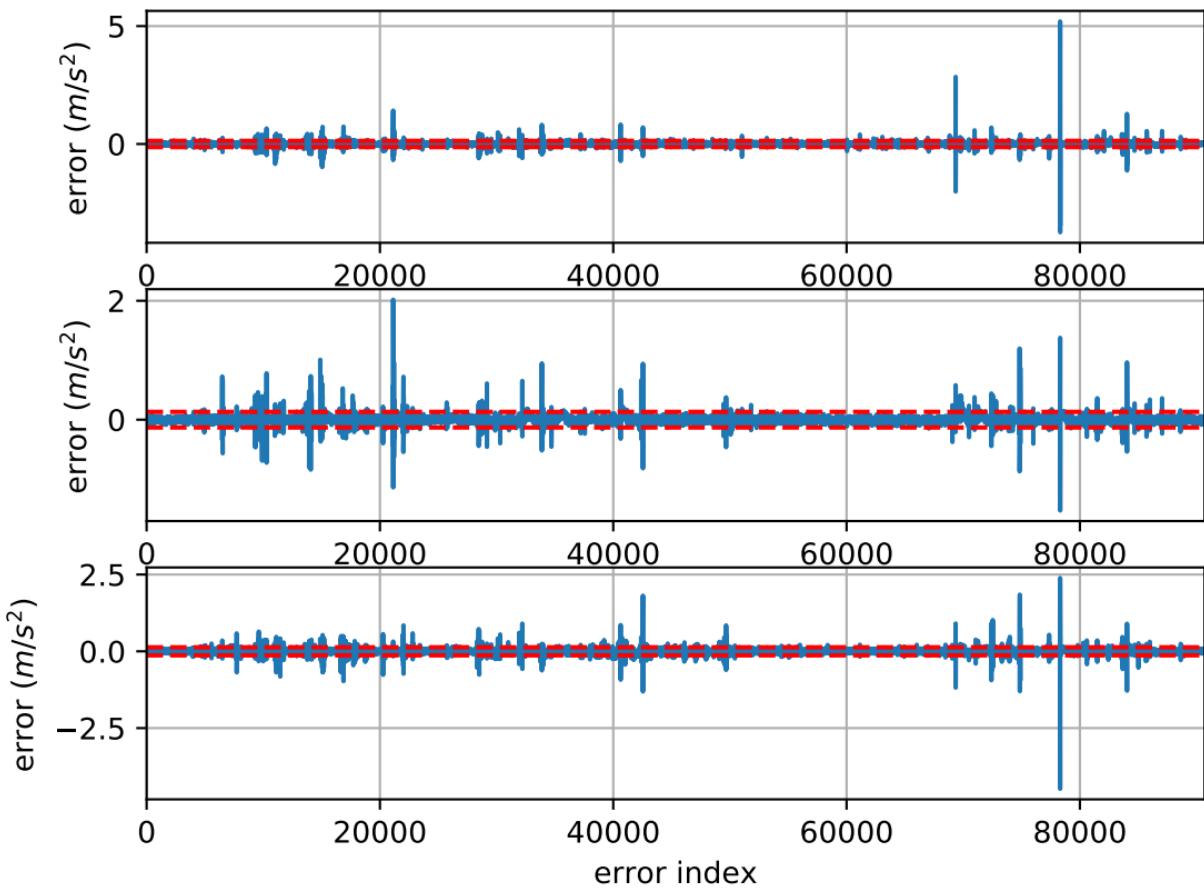
imu0: sample inertial rate



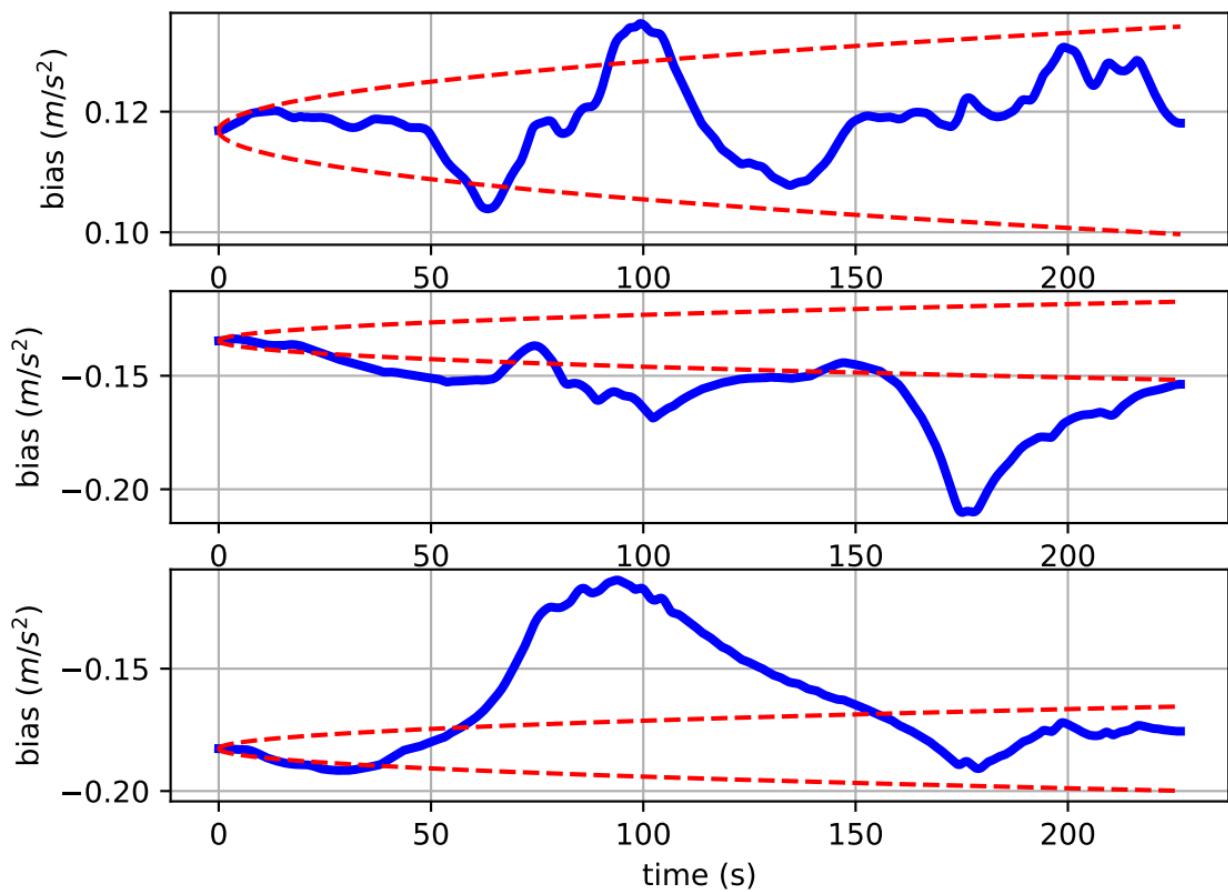
Comparison of predicted and measured specific force (imu0 frame)



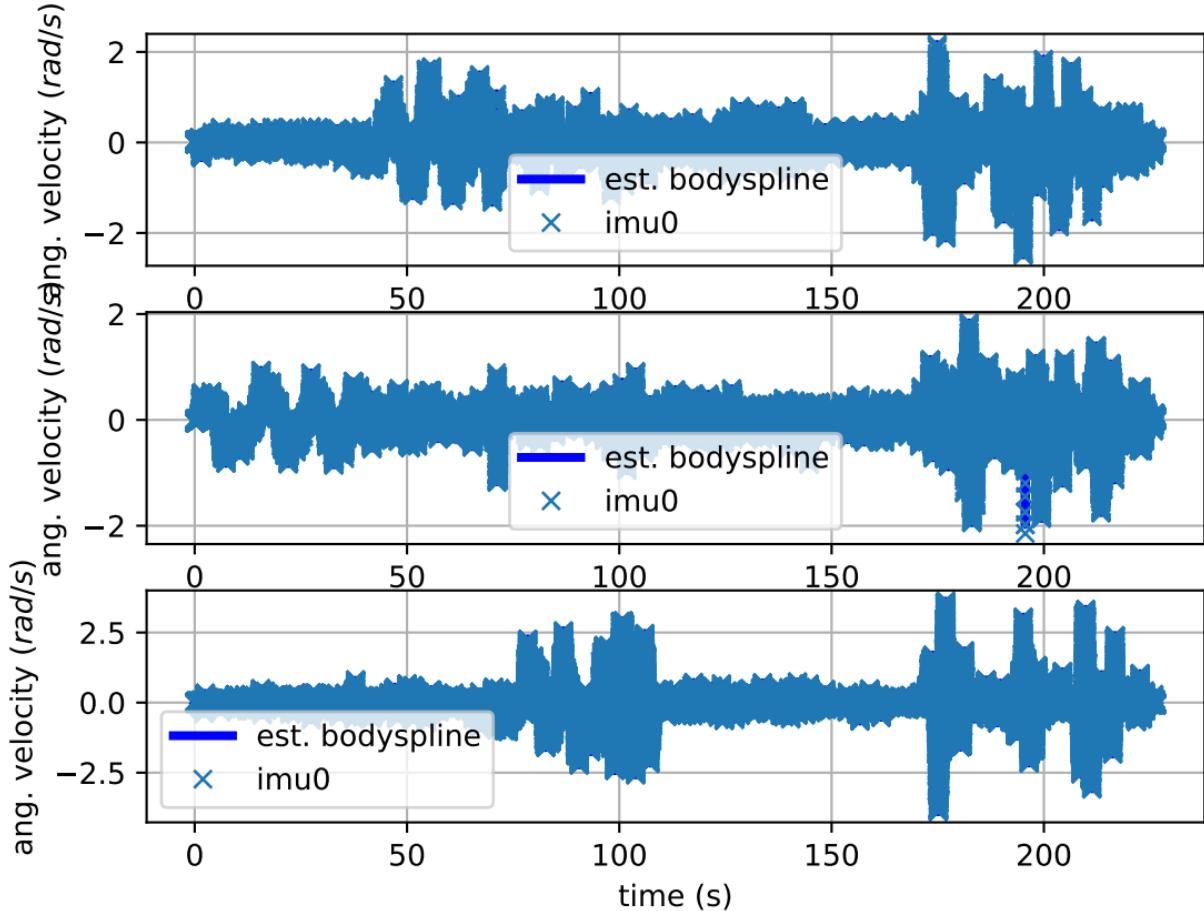
imu0: acceleration error



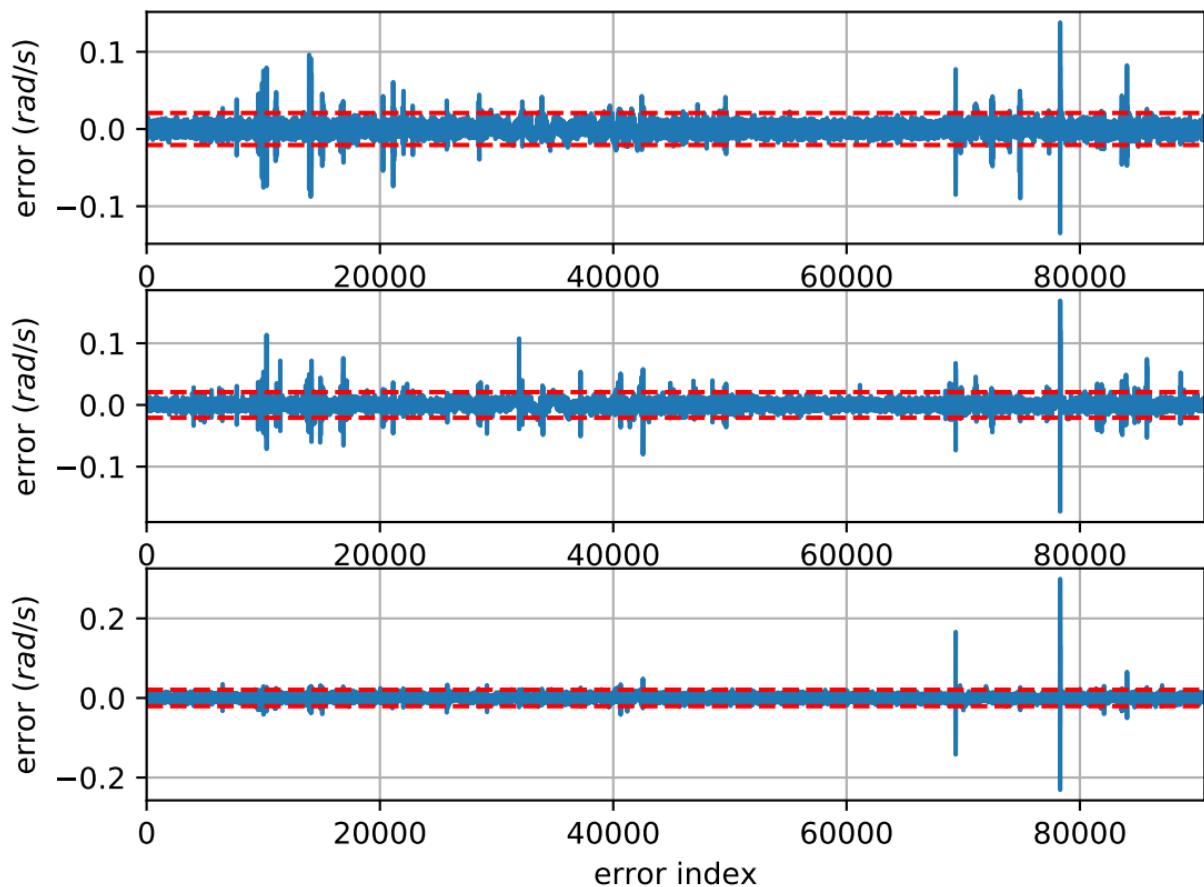
imu0: estimated accelerometer bias (imu frame)



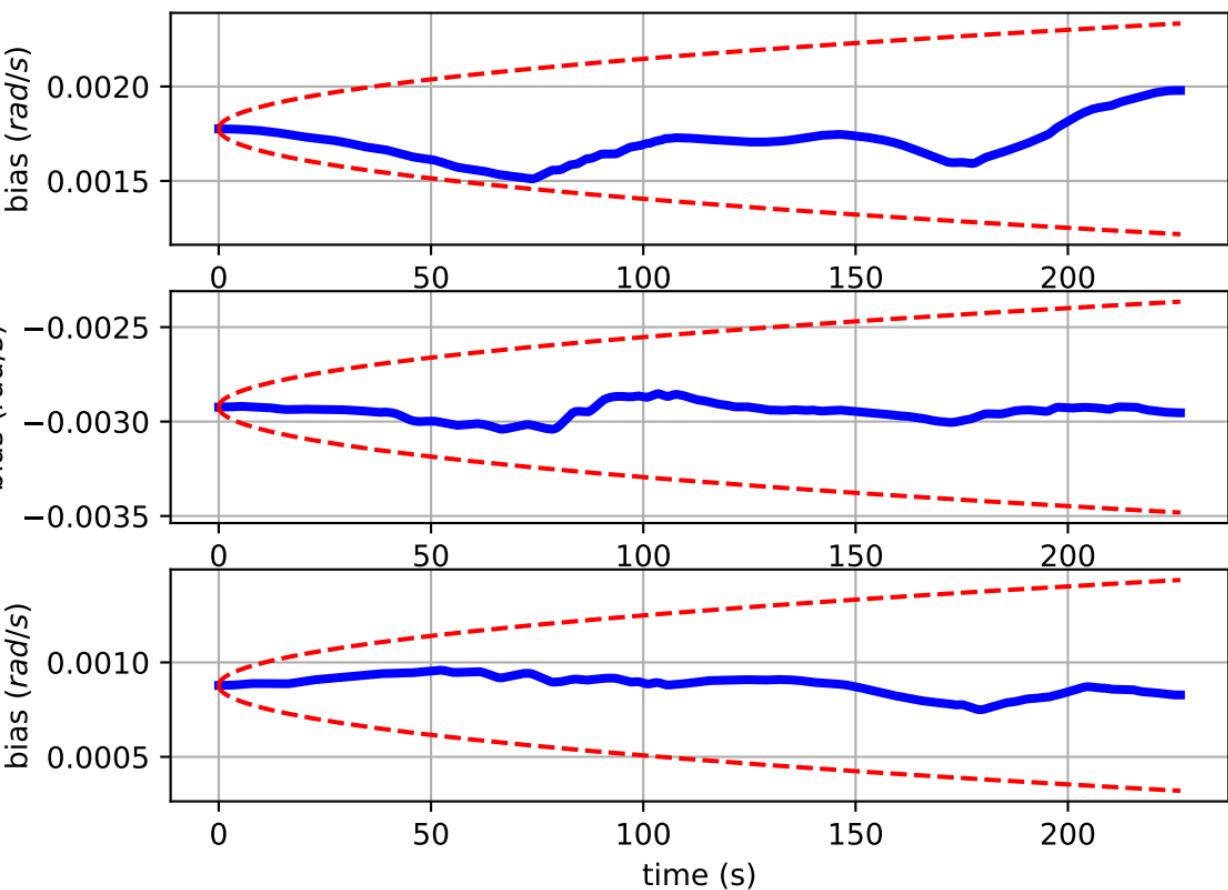
Comparison of predicted and measured angular velocities (body frame)



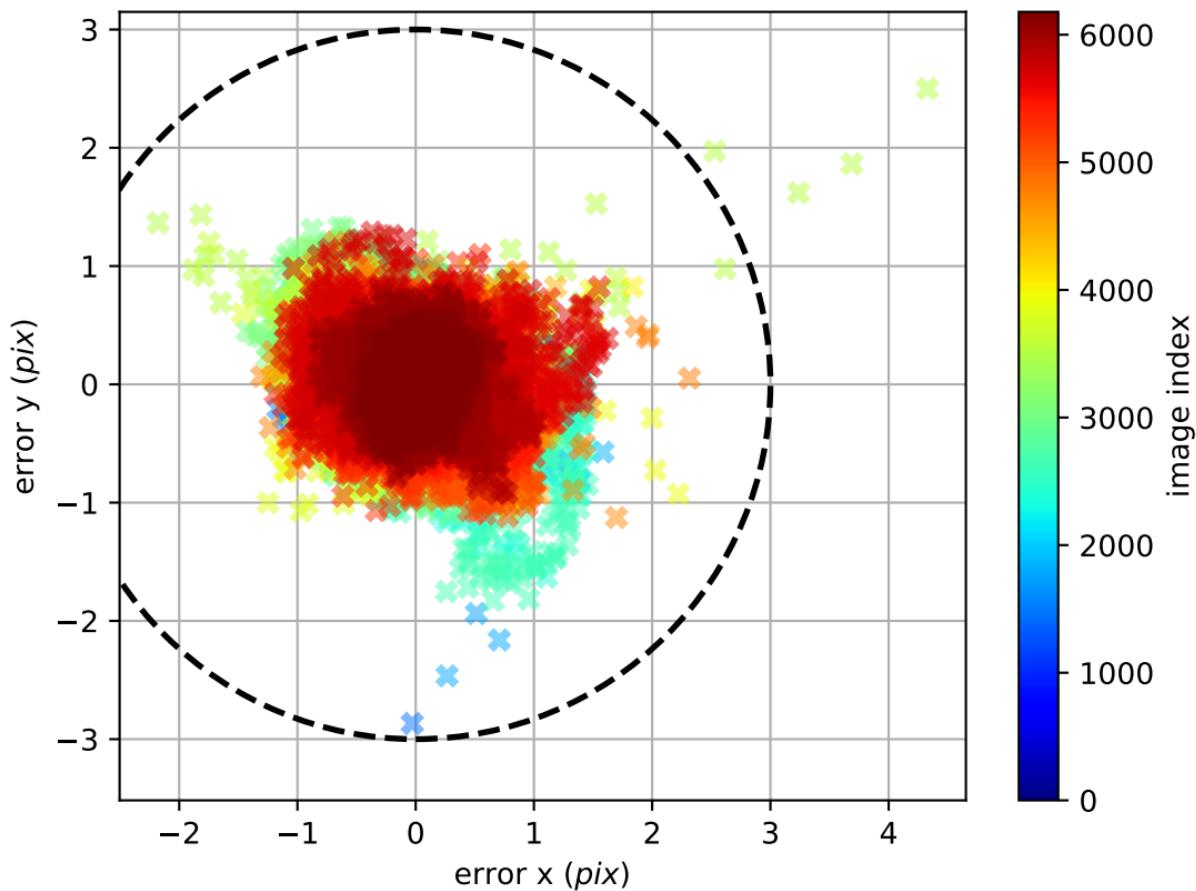
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

