

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.682939230312, median 0.427143032042, std: 0.793462478403
Gyroscope error (imu0): mean 1.13739477851, median 0.909938293688, std: 2.89426881017
Accelerometer error (imu0): mean 1.11046982701, median 0.873313230008, std: 2.15484124985
Gyroscope error (imu1): mean 1.95679141116, median 1.61698635683, std: 1.82326438581
Accelerometer error (imu1): mean 0.999216175824, median 0.826950880151, std: 1.95276226638

Residuals

Reprojection error (cam0) [px]: mean 0.682939230312, median 0.427143032042, std: 0.793462478403
Gyroscope error (imu0) [rad/s]: mean 0.000817821455946, median 0.000654273322005, std: 0.00208106
Accelerometer error (imu0) [m/s^2]: mean 0.0180630848238, median 0.0142054566164, std: 0.035051002
Gyroscope error (imu1) [rad/s]: mean 0.0070418659348, median 0.00581901631326, std: 0.00656134491
Accelerometer error (imu1) [m/s^2]: mean 0.0756937360739, median 0.0626441036312, std: 0.147927821

Transformation (cam0):

T_ci: (imu0 to cam0):

[[-0.00748223 -0.99980935 -0.01803543 0.06459126]
[-0.00091644 0.01804279 -0.9998368 -0.02084552]
[0.99997159 -0.00746448 -0.00105127 -0.09141299]
[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[-0.00748223 -0.00091644 0.99997159 0.09187457]
[-0.99980935 0.01804279 -0.00746448 0.0642727]
[-0.01803543 -0.9998368 -0.00105127 -0.01977329]
[0. 0. 0. 1.]]

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

0.0182796450905

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

Calibration configuration

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cam0

Camera model: pinhole

Focal length: [1199.1, 1199.2]

Principal point: [1037.4, 795.5]

Distortion model: radtan

Distortion coefficients: [-0.0899, 0.0834, 0.0013, 0.00057139]

Type: checkerboard

Rows

Count: 11

Distance: 0.03 [m]

Cols

Count: 8

Distance: 0.03 [m]

IMU configuration

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IMU0:

Model: calibrated

Update rate: 200.0

Accelerometer:

Noise density: 0.0011501915187

Noise density (discrete): 0.0162661644508

Random walk: 3.72985406906e-05

Gyroscope:

Noise density: 5.08431292483e-05

Noise density (discrete): 0.000719030429364

Random walk: 6.50982341241e-07

T_i_b

[1. 0. 0. 0.]

time offset with respect to IMU0: 0.0 [s]

IMU1:

Model: calibrated

Update rate: 100.0

Accelerometer:

Noise density: 0.00757531131955

Noise density (discrete): 0.0757531131955

Random walk: 0.000315776268606

Gyroscope:

Noise density: 0.000359867990765

Noise density (discrete): 0.00359867990765

Random walk: 5.51133558684e-06

T_i_b

[[0.99983919 -0.01701715 -0.00565748 0.01632796]

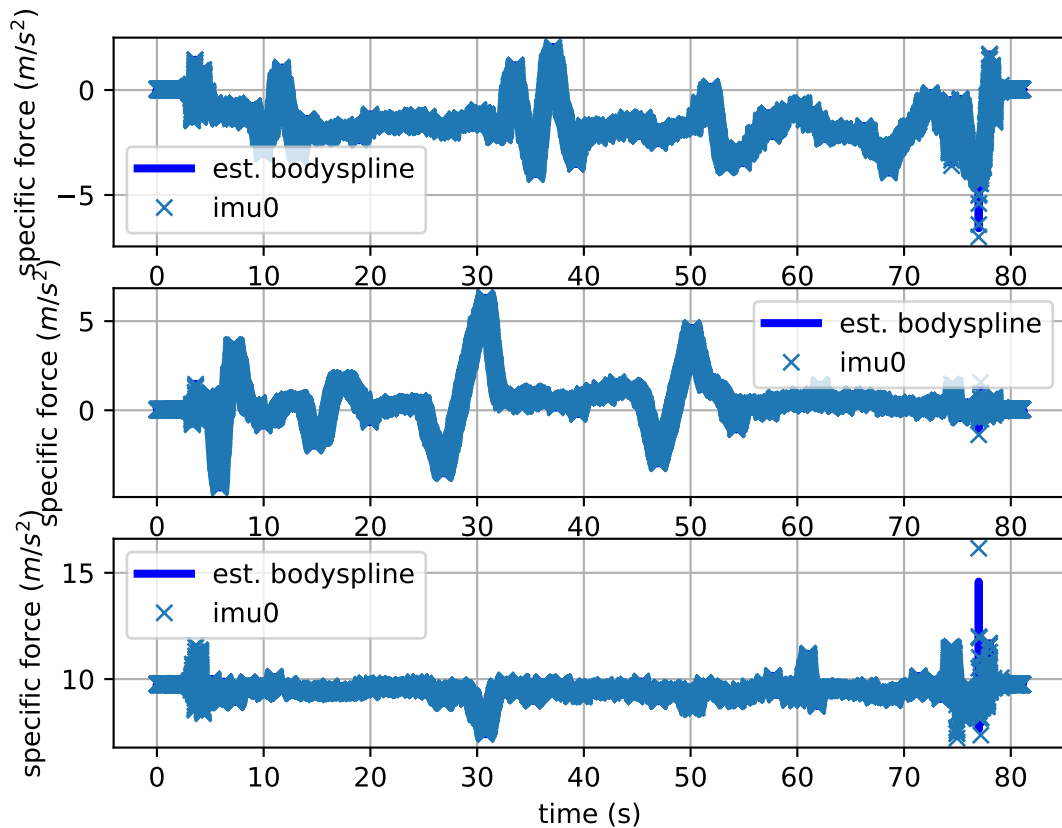
[0.01701338 0.99985501 -0.0007142 0.01344661]

[0.00566881 0.00061784 0.99998374 0.05097226]

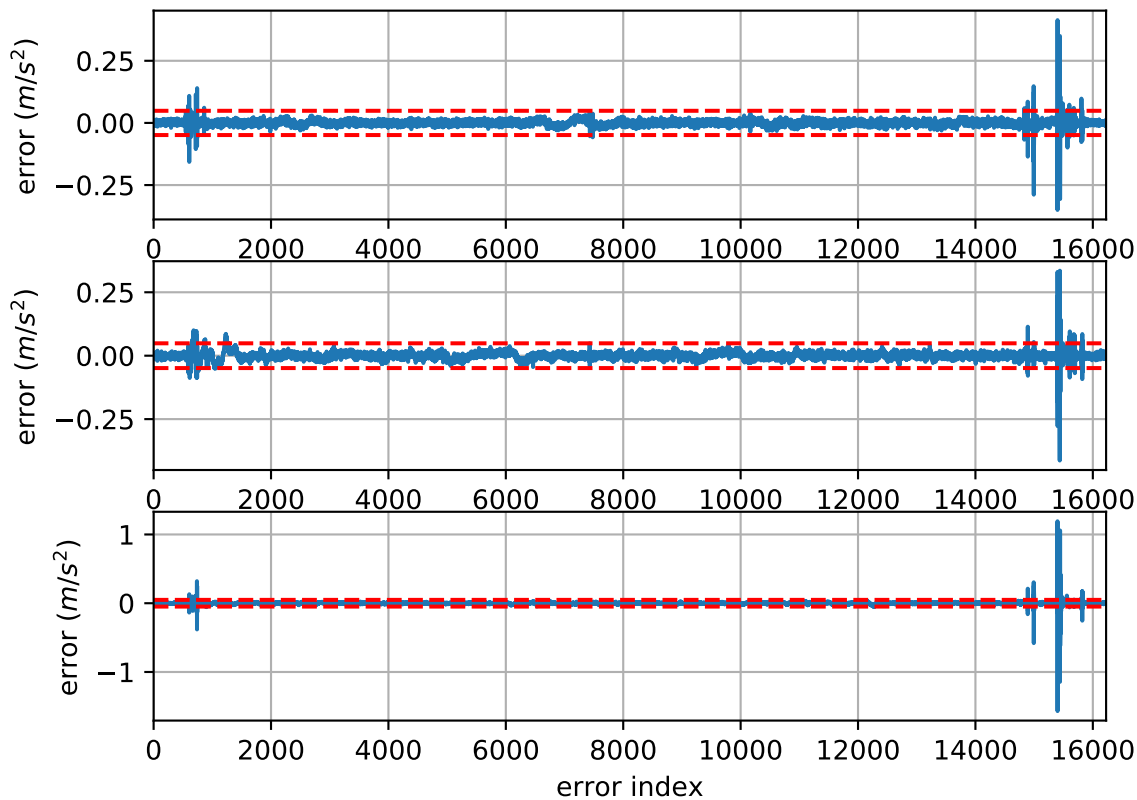
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.064224664817 [s]

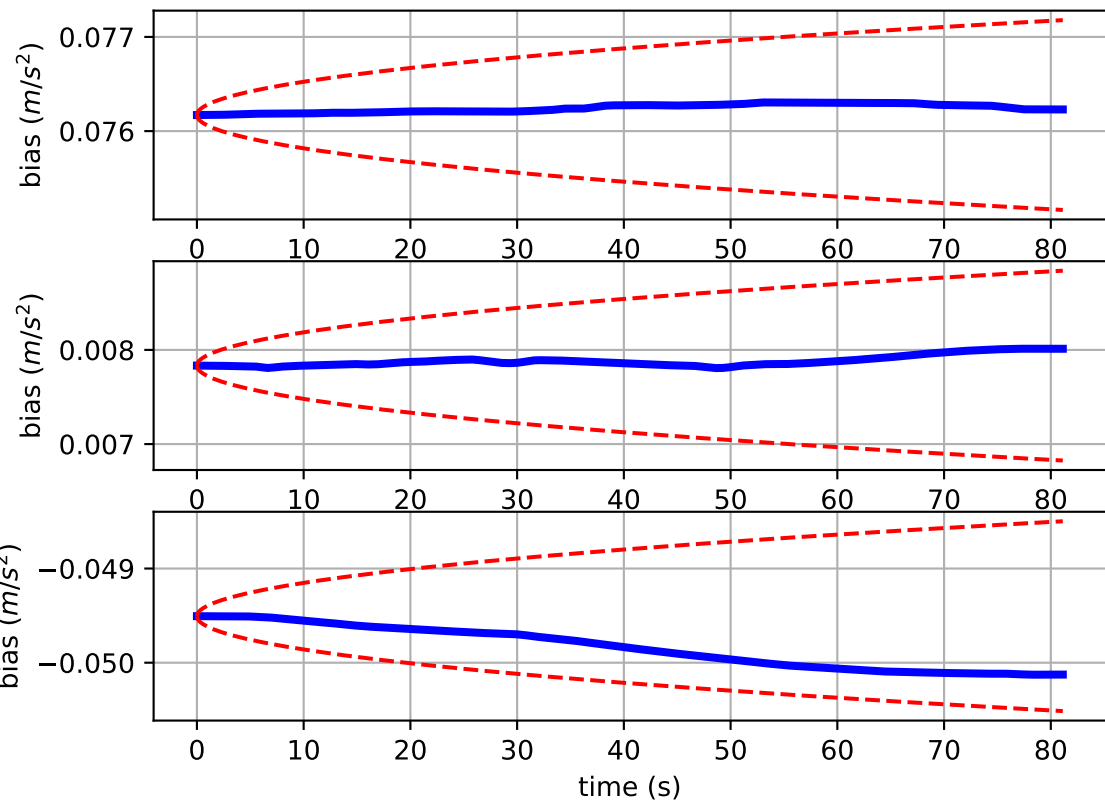
Comparison of predicted and measured specific force (imu0 frame)



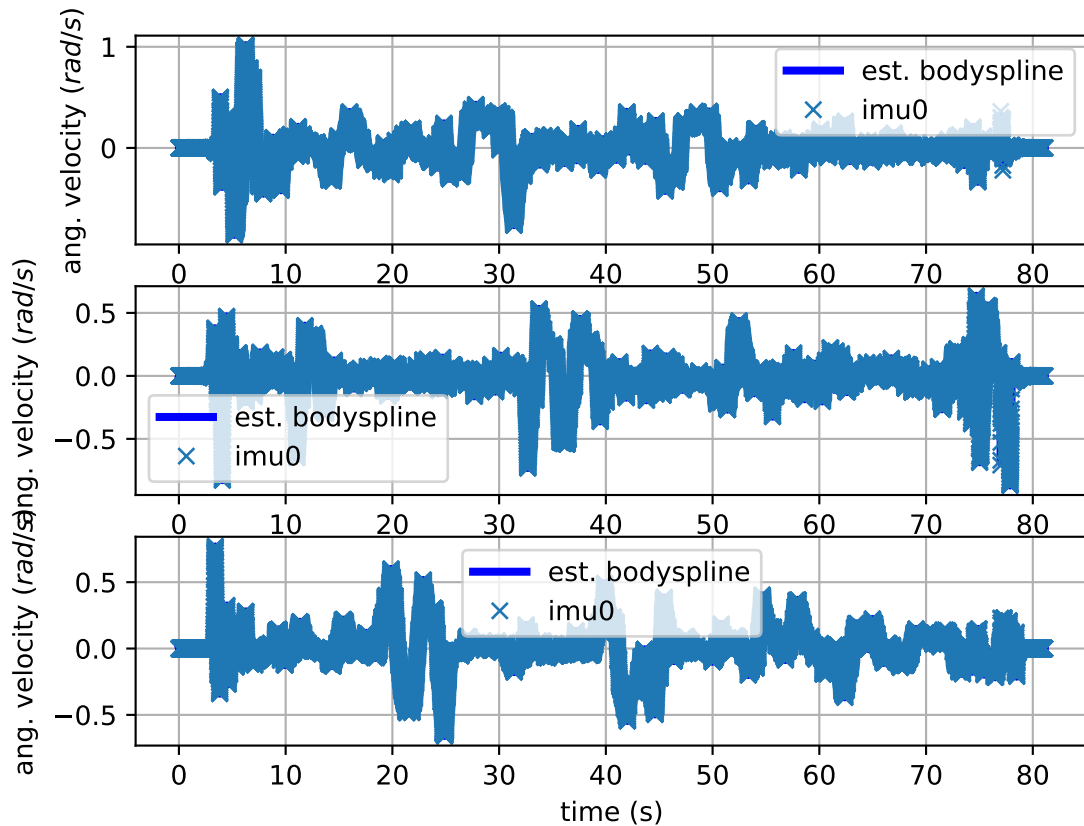
imu0: acceleration error



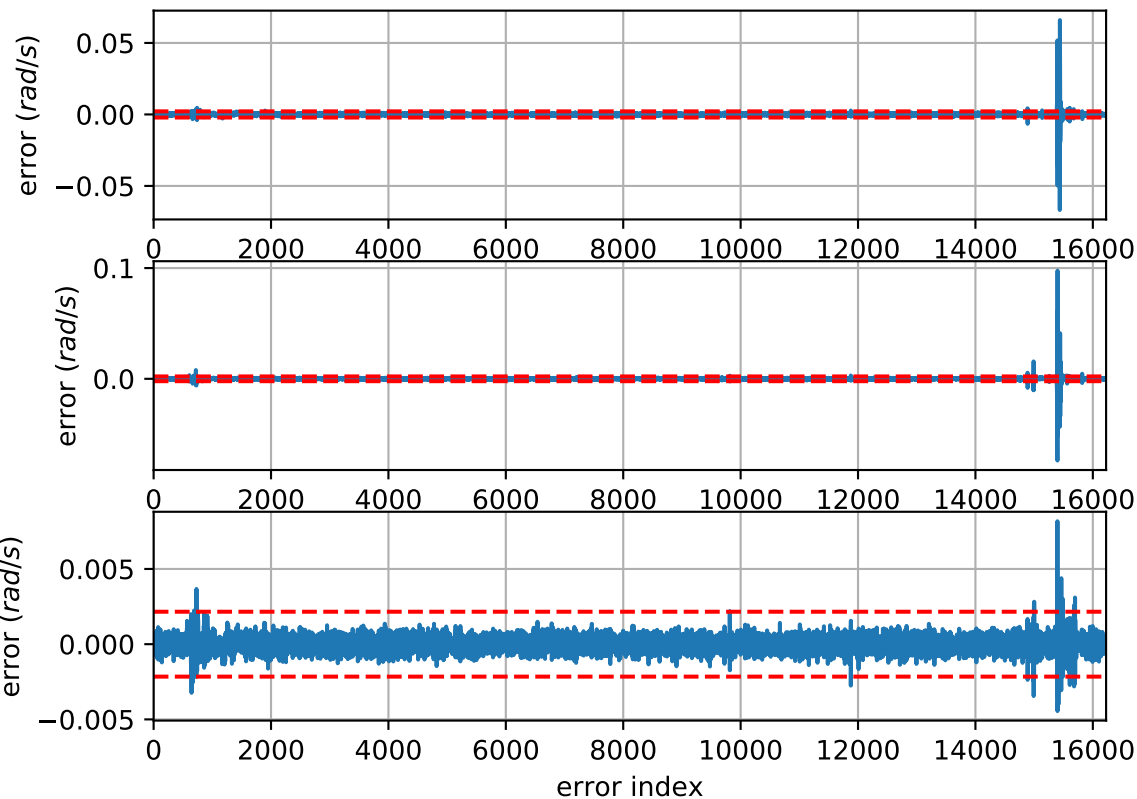
imu0: estimated accelerometer bias (imu frame)



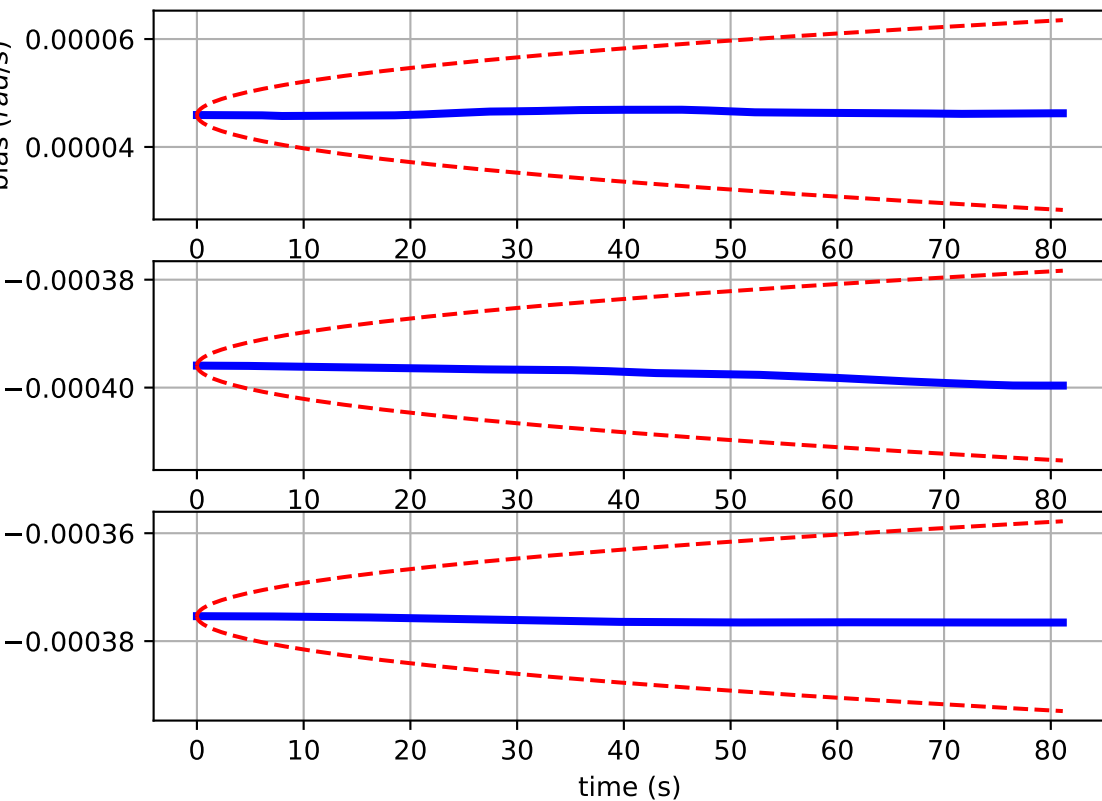
Comparison of predicted and measured angular velocities (body frame)



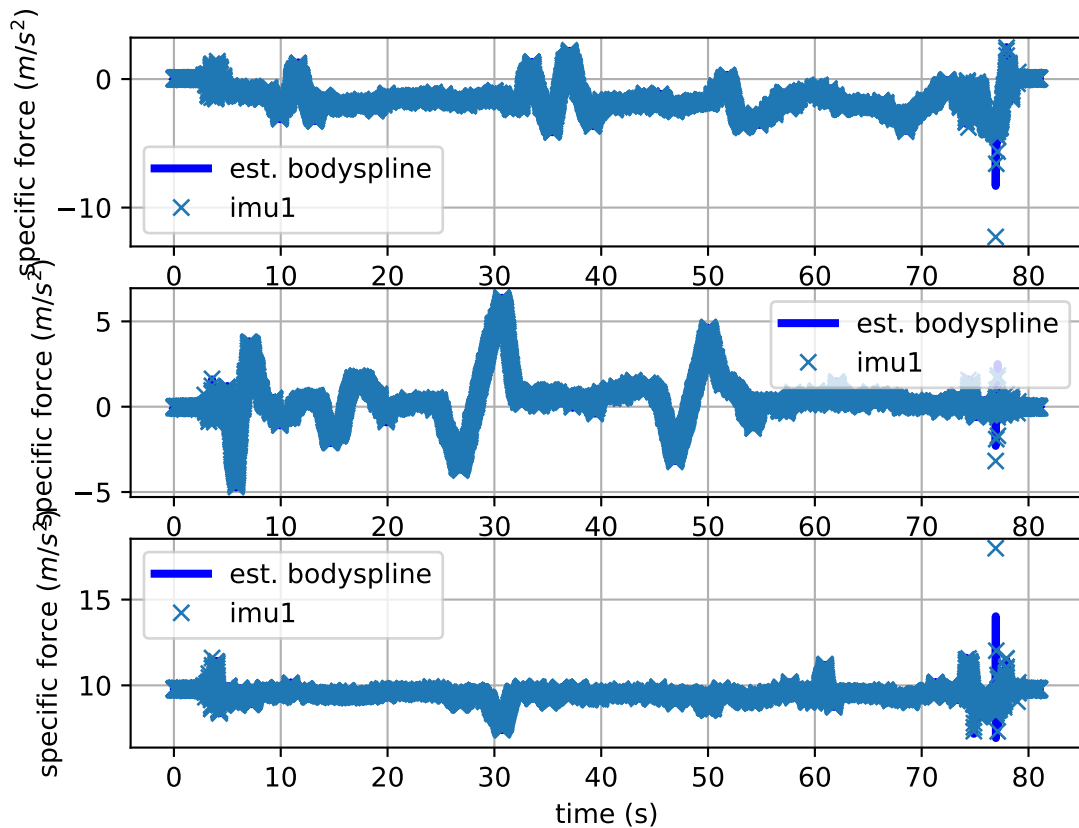
imu0: angular velocities error



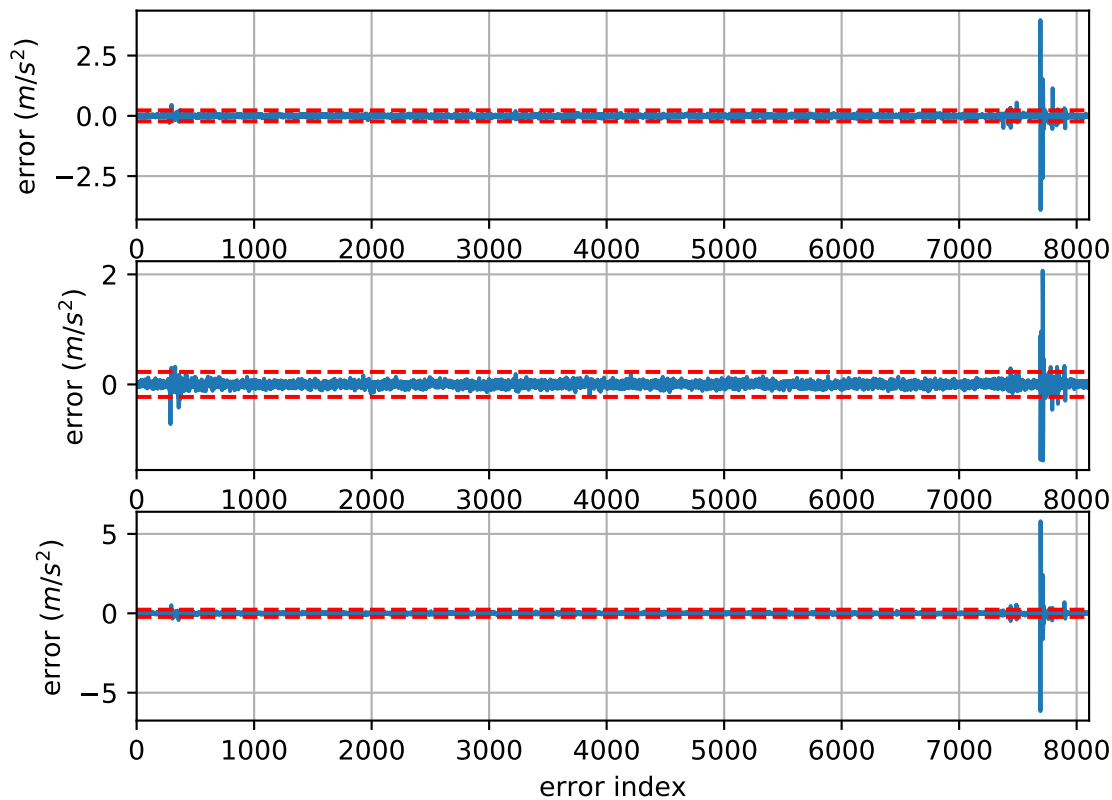
imu0: estimated gyro bias (imu frame)



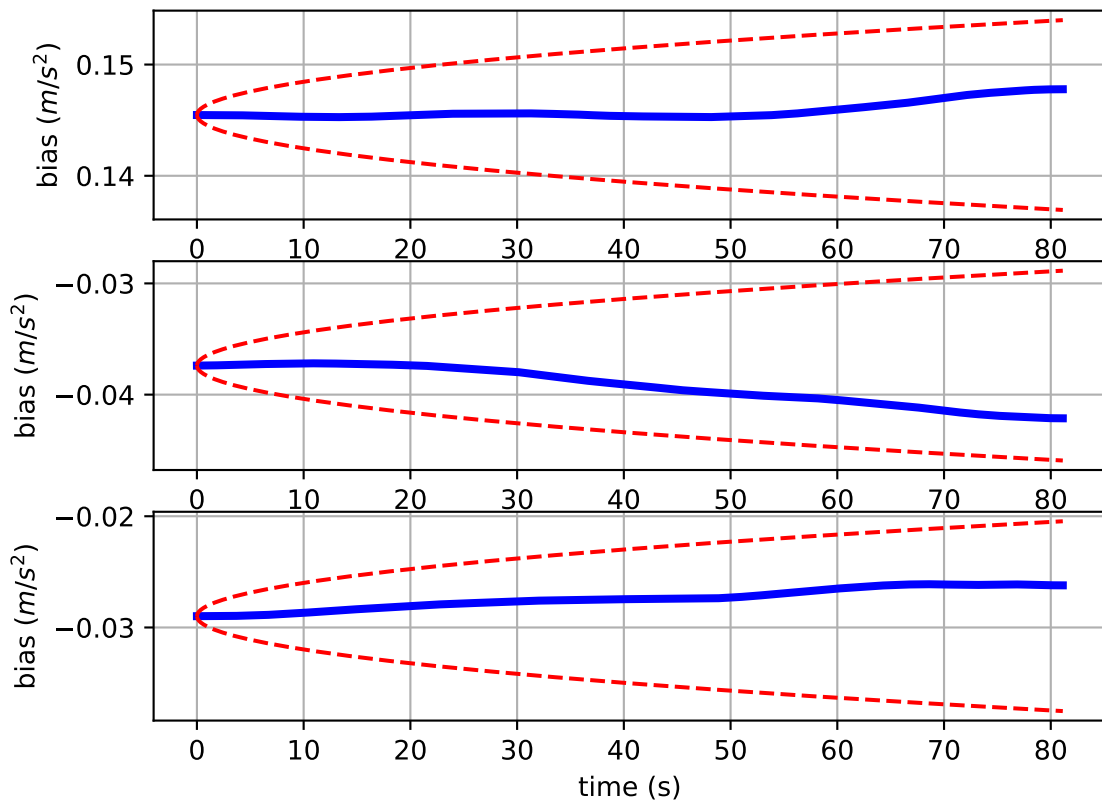
Comparison of predicted and measured specific force (imu0 frame)



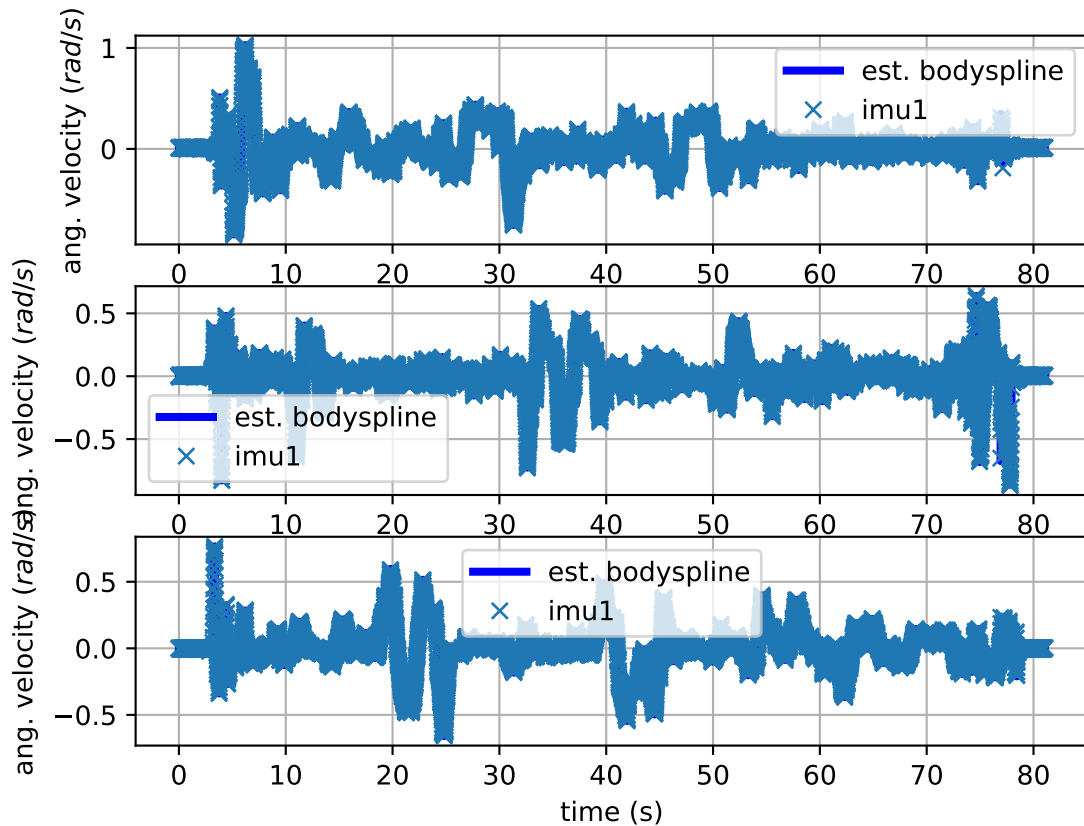
imu1: acceleration error



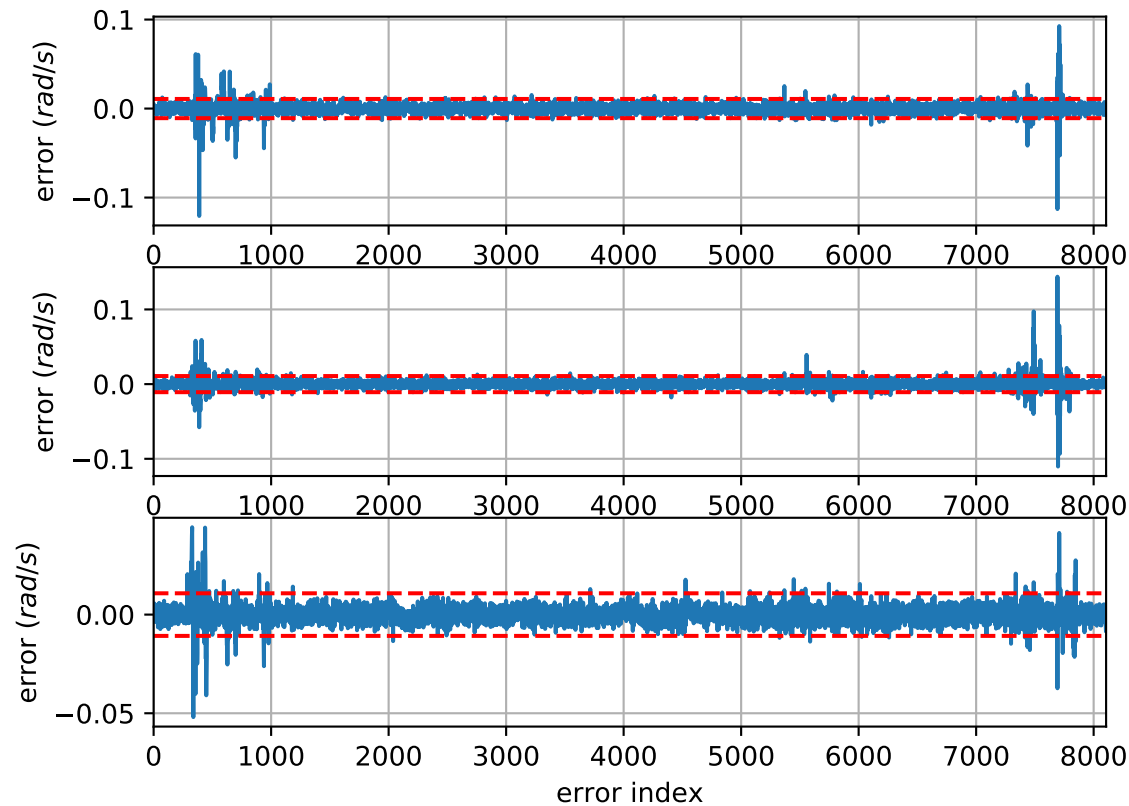
imu1: estimated accelerometer bias (imu frame)



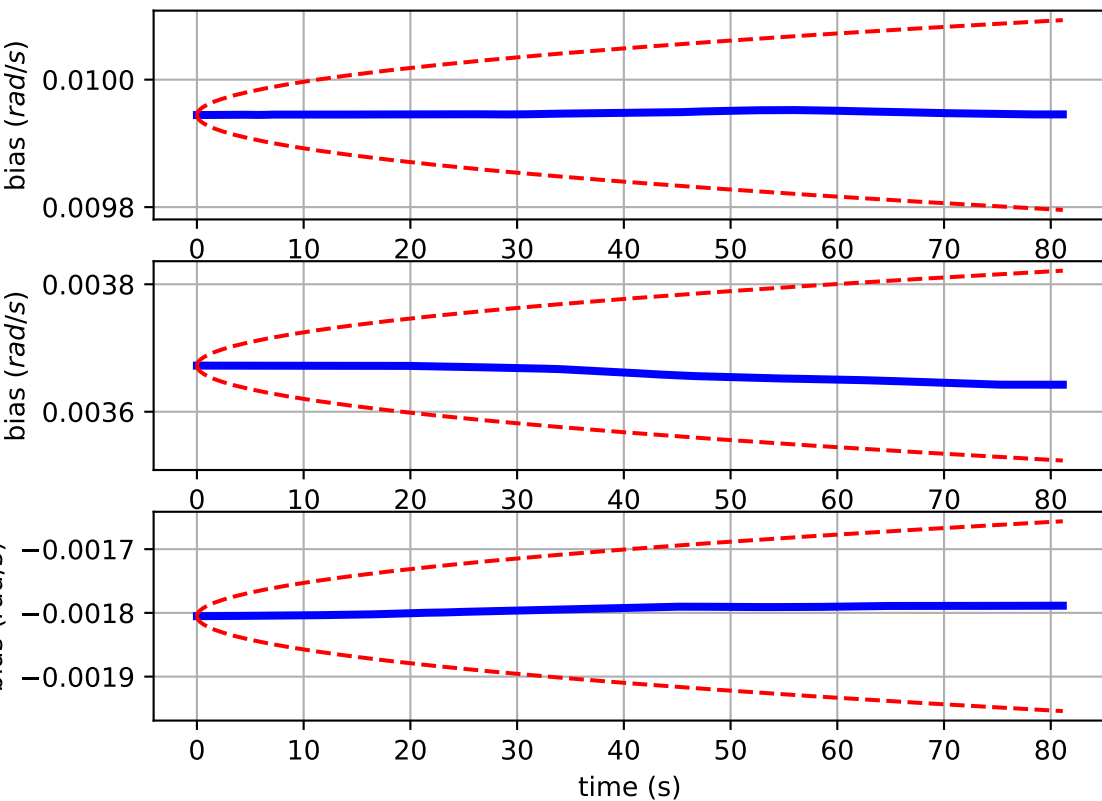
Comparison of predicted and measured angular velocities (body frame)



imu1: angular velocities error



imu1: estimated gyro bias (imu frame)



cam0: reprojection errors

