

Calibration results

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Normalized Residuals

Reprojection error (cam0): mean 0.1483641046788988, median 0.12634462445197464, std: 0.10246909

Gyroscope error (imu0): mean 5.718222345736656e-11, median 4.622021563921828e-11, std: 7.33737

Accelerometer error (imu0): mean 9.389328583813422e-11, median 6.911774670934873e-11, std: 9.6556

Residuals

Reprojection error (cam0) [px]: mean 0.1483641046788988, median 0.12634462445197464, std: 0.10246

Gyroscope error (imu0) [rad/s]: mean 2.3466159800326475e-14, median 1.896762491238383e-14, std: 3

Accelerometer error (imu0) [m/s^2]: mean 9.933075682090733e-13, median 7.312043698450476e-13, std:

Transformation (cam0):

T_ci: (imu0 to cam0):

[[0.01840841 -0.99932998 0.03163408 -0.00006355]

[-0.47145218 -0.03657701 -0.88113277 -0.00002496]

[0.88169948 0.0013063 -0.47180963 0.00005031]

[0. 0. 0. 1.]]

T_ic: (cam0 to imu0):

[[0.01840841 -0.47145218 0.88169948 -0.00005496]

[-0.99932998 -0.03657701 0.0013063 -0.00006448]

[0.03163408 -0.88113277 -0.47180963 0.00000375]

[0. 0. 0. 1.]]

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

-0.0692493414254082

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

[9.79630075 -0.40816092 0.18525455]

Calibration configuration

Camera model: pinhole
Focal length: [468.50173, 468.76673]
Principal point: [337.67932, 235.53148]
Distortion model: radtan
Distortion coefficients: [0.004185, 0.025888, -0.010064, 0.00115]
Type: checkerboard
Rows
 Count: 6
 Distance: 0.05 [m]
Cols
 Count: 11
 Distance: 0.05 [m]

IMU configuration

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IMU0:

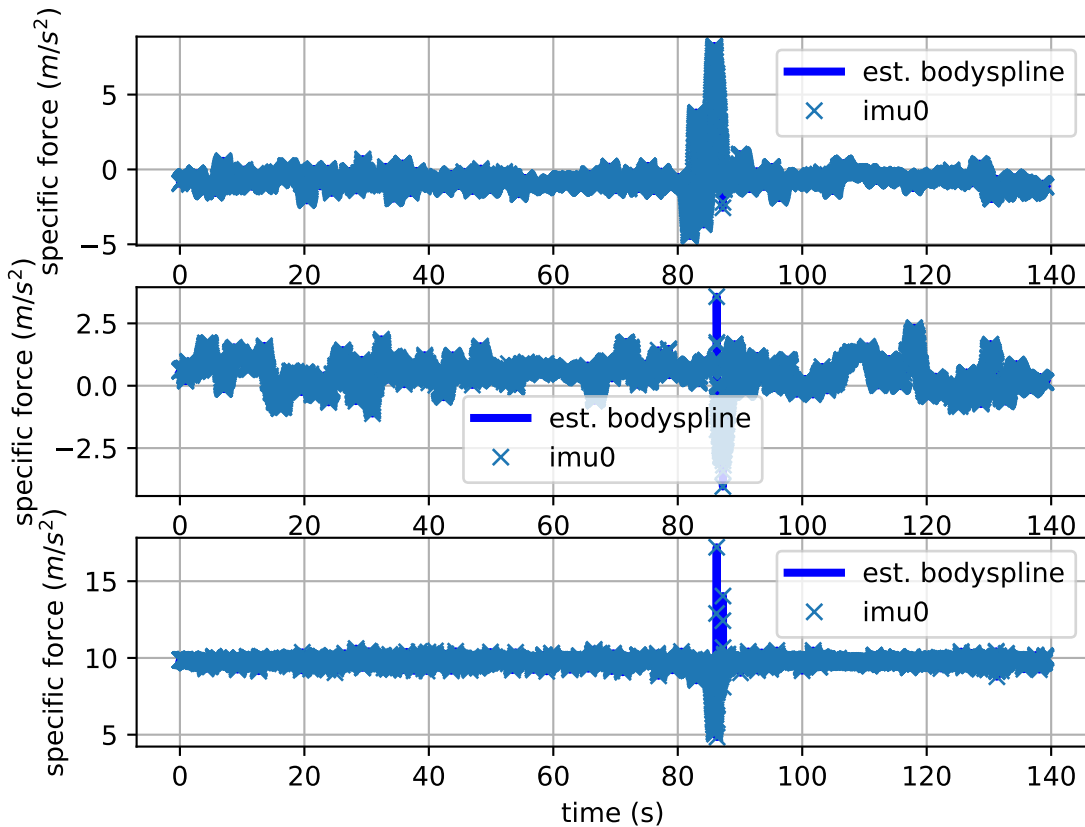
Model: calibrated
Update rate: 30
Accelerometer:
 Noise density: 0.0019314727238559915
 Noise density (discrete): 0.010579111800618731
 Random walk: 0.00024369423344425823
Gyroscope:
 Noise density: 7.492389699421491e-05
 Noise density (discrete): 0.0004103750847992502
 Random walk: 4.253266741725987e-06

T_i b

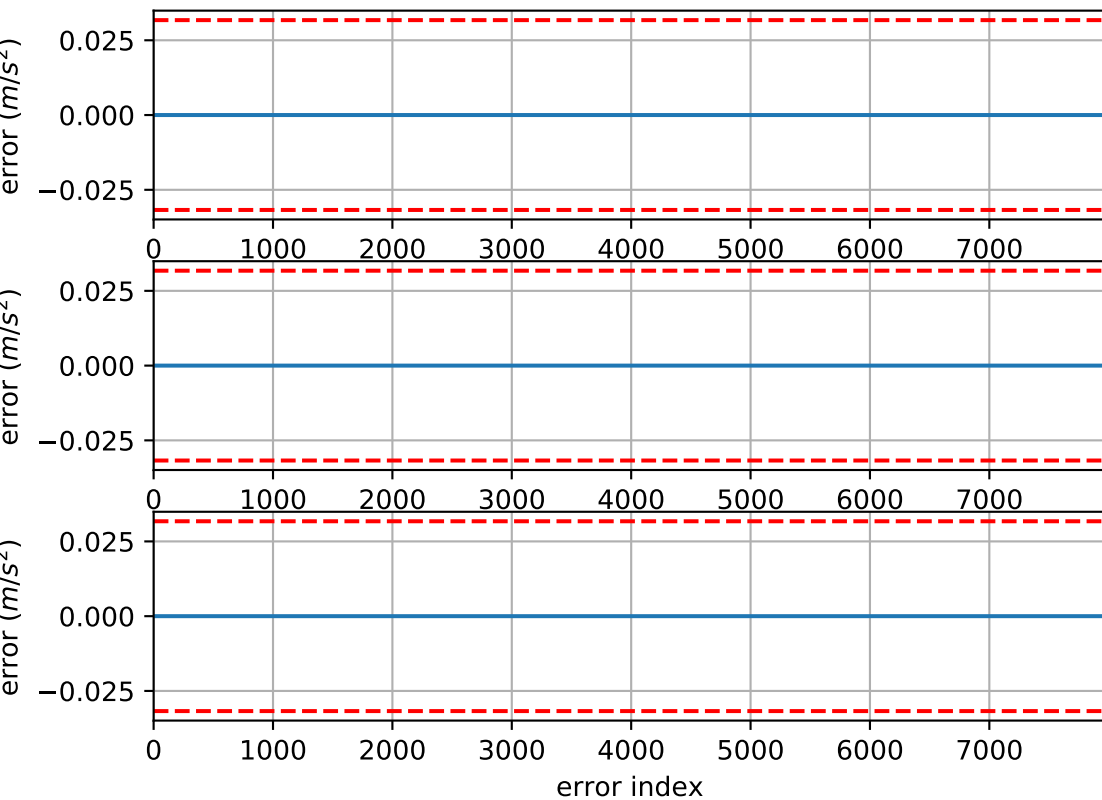
[[1. 0. 0. 0.]
 [0. 1. 0. 0.]
 [0. 0. 1. 0.]
 [0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

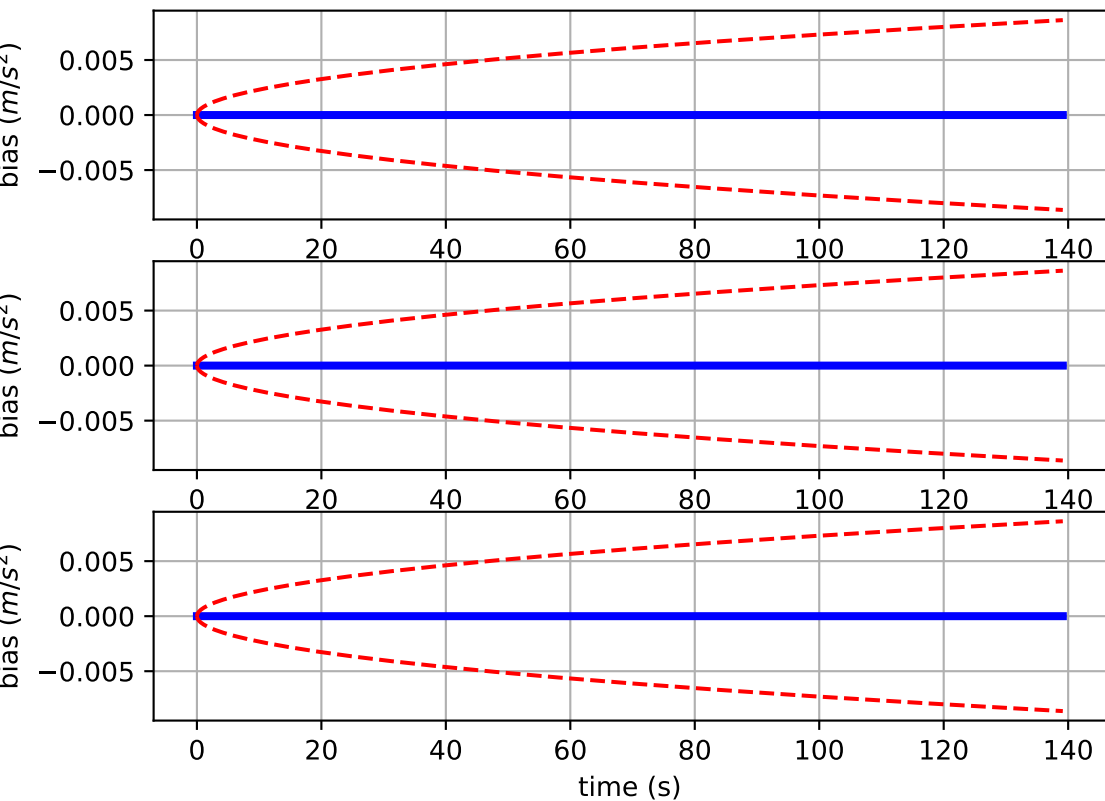
Comparison of predicted and measured specific force (imu0 frame)



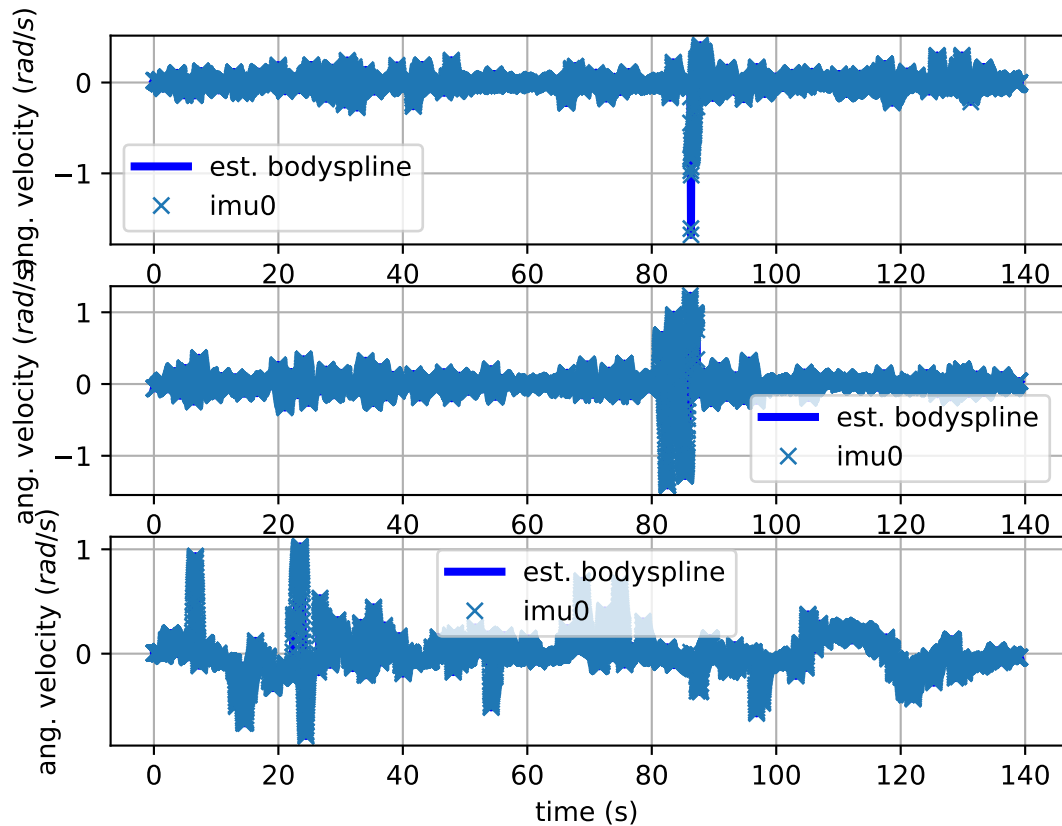
imu0: acceleration error



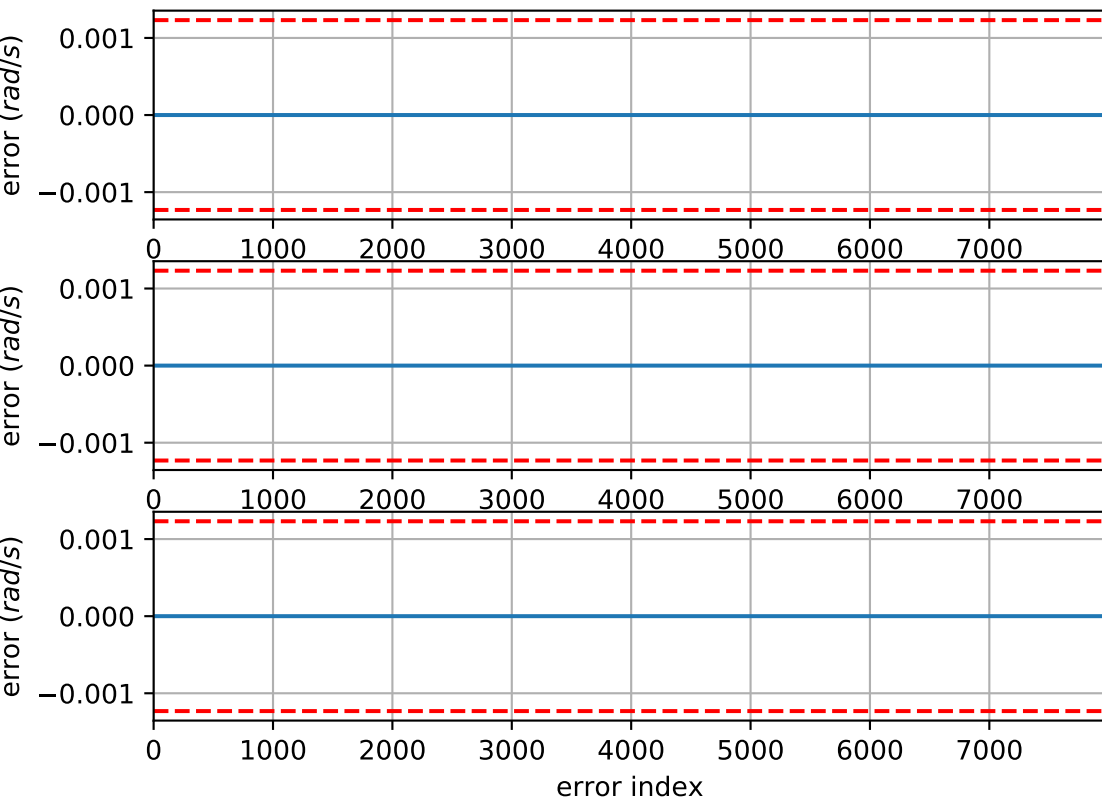
imu0: estimated accelerometer bias (imu frame)



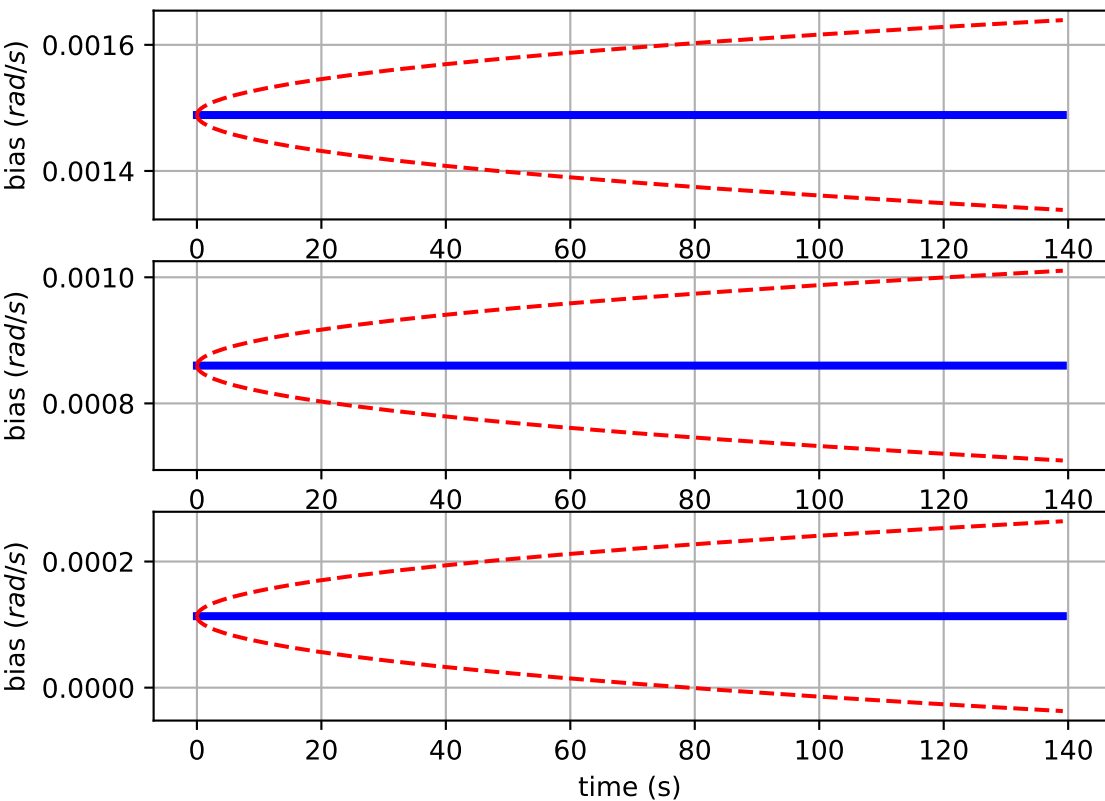
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors

