

## Calibration results

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### Normalized Residuals

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Reprojection error (cam0): mean 0.0455582272958, median 0.0423858106109, std: 0.0246574759433

Gyroscope error (imu0): mean 0.0621014180447, median 0.0513521710706, std: 0.0415298277848

Accelerometer error (imu0): mean 0.779271987522, median 0.306997899662, std: 0.931262272105

### Residuals

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Reprojection error (cam0) [px]: mean 0.0455582272958, median 0.0423858106109, std: 0.0246574759433

Gyroscope error (imu0) [rad/s]: mean 0.00439123338207, median 0.00363114683927, std: 0.0029366022

Accelerometer error (imu0) [m/s^2]: mean 0.110205701353, median 0.0434160593322, std: 0.1317003735

### Transformation (cam0):

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T\_ci: (imu0 to cam0):

[[ 0.99997244 0.00090024 0.00736908 -0.04060637]

[-0.00083606 0.99996174 -0.00870801 -0.00865148]

[-0.00737664 0.00870161 0.99993493 -0.00015814]

[ 0. 0. 0. 1. ]]

T\_ic: (cam0 to imu0):

[[ 0.99997244 -0.00083606 -0.00737664 0.04059685]

[ 0.00090024 0.99996174 0.00870161 0.00868908]

[ 0.00736908 -0.00870801 0.99993493 0.00038202]

[ 0. 0. 0. 1. ]]

timeshift cam0 to imu0: [s] (t\_imu = t\_cam + shift)

0.0010717539755843825

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

[ 9.8041784 -0.21216074 0.038687 ]

Calibration configuration

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Camera model: pinhole

Focal length: [468.906082694885, 468.95979206327786]

Principal point: [364.8533346068778, 215.4937445050946]

Distortion model: equidistant

Distortion coefficients: [0.012245093310874177, -0.06011529683474609, 0.17162762296825532, -0.1534

Type: checkerboard

Rows

Count: 7

Distance: 0.07 [m]

Cols

Count: 6

Distance: 0.07 [m]

IMU configuration

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IMU0:

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Model: calibrated

Update rate: 200.0

Accelerometer:

Noise density: 0.01

Noise density (discrete): 0.141421356237

Random walk: 0.0002

Gyroscope:

Noise density: 0.005

Noise density (discrete): 0.0707106781187

Random walk: 4e-06

T\_i b

[[1. 0. 0. 0.]

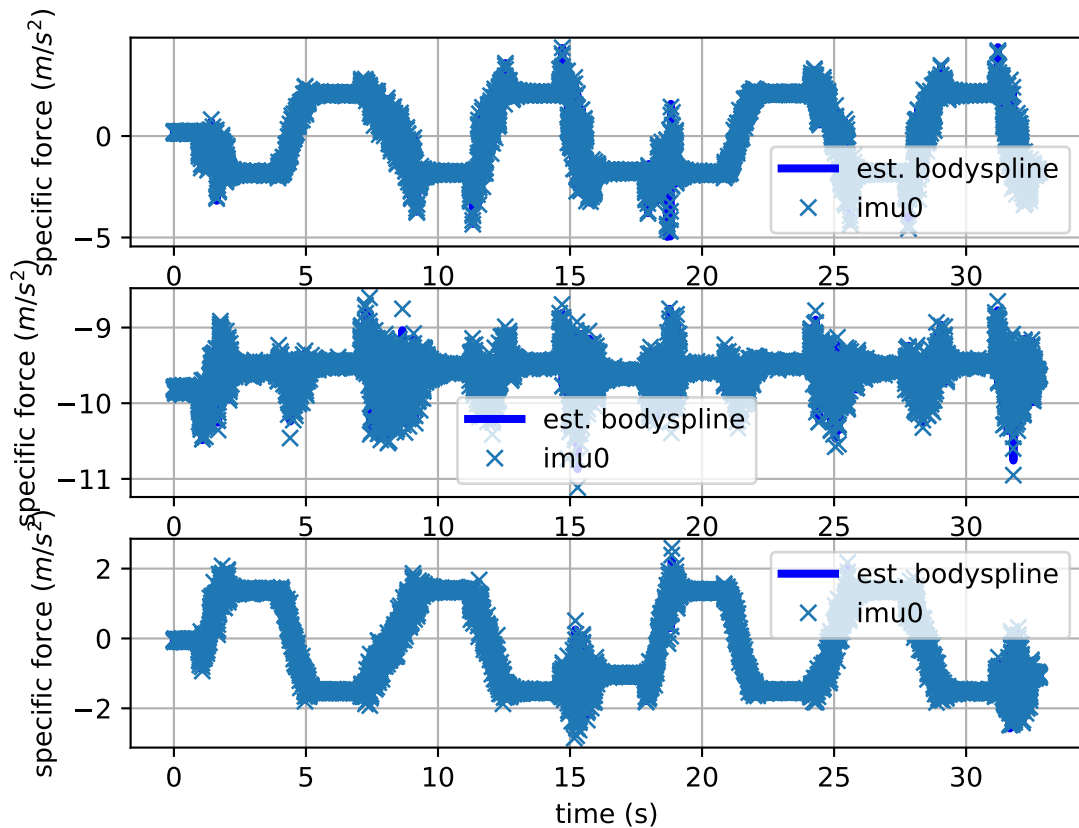
[0. 1. 0. 0.]

[0. 0. 1. 0.]

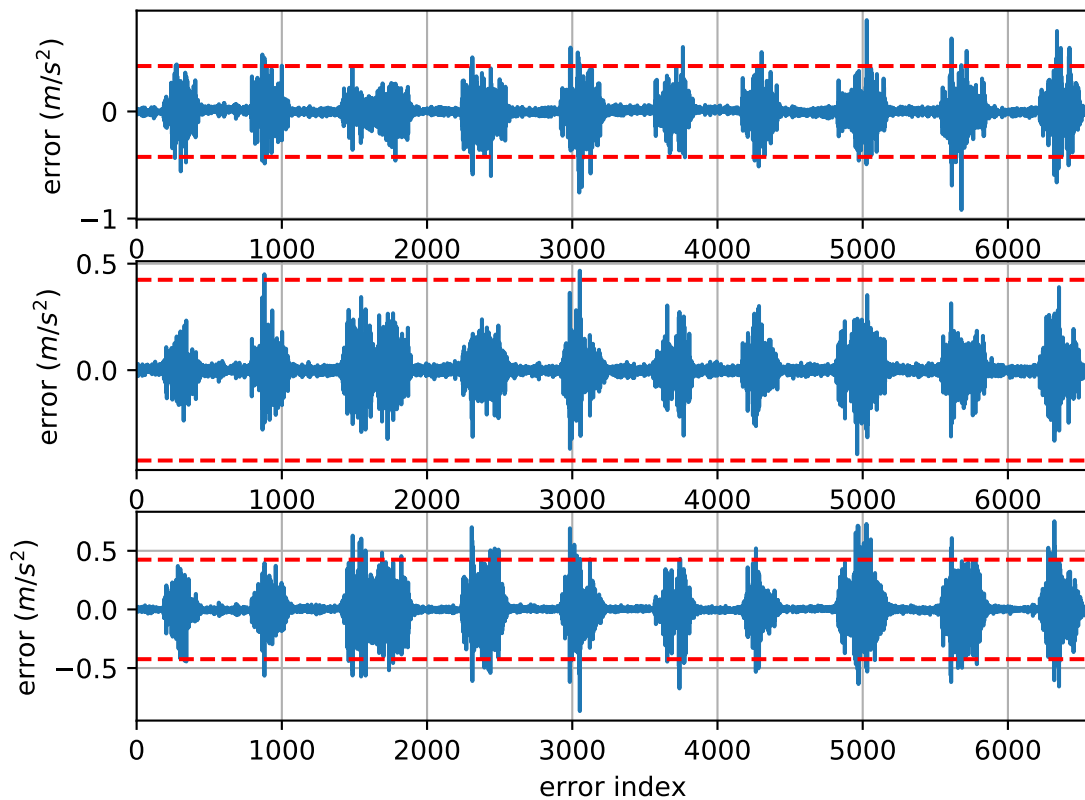
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

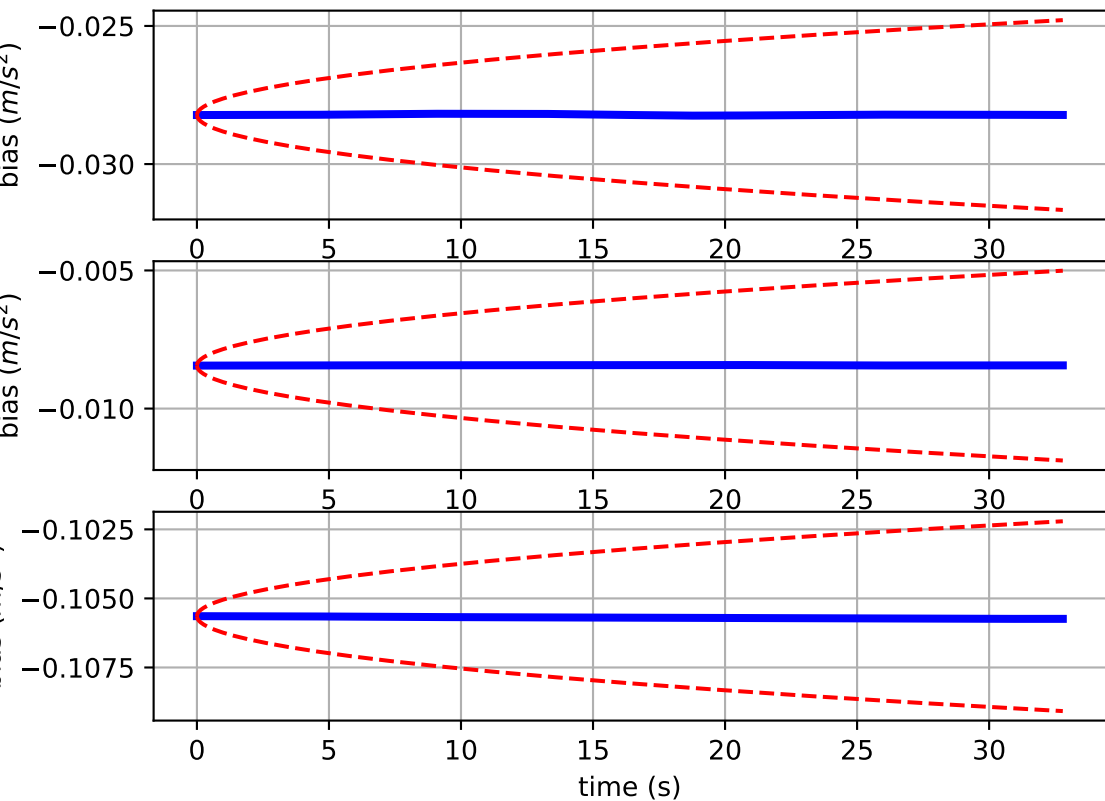
Comparison of predicted and measured specific force (imu0 frame)



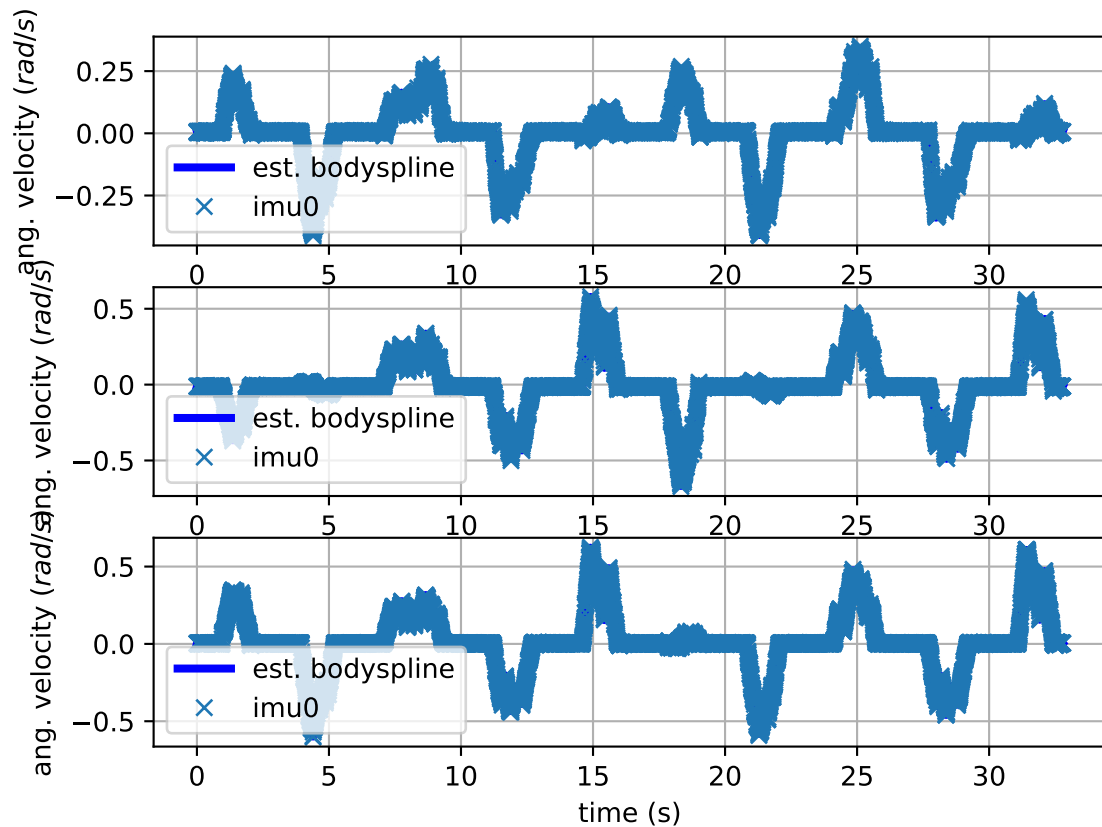
imu0: acceleration error



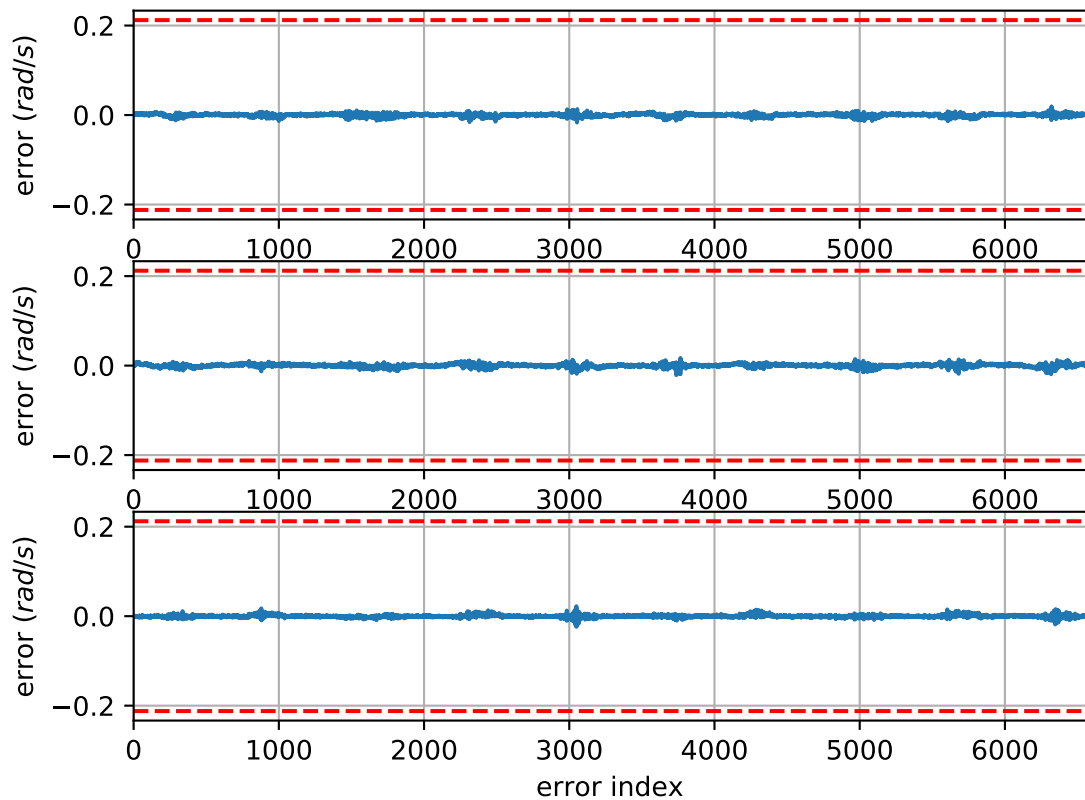
imu0: estimated accelerometer bias (imu frame)



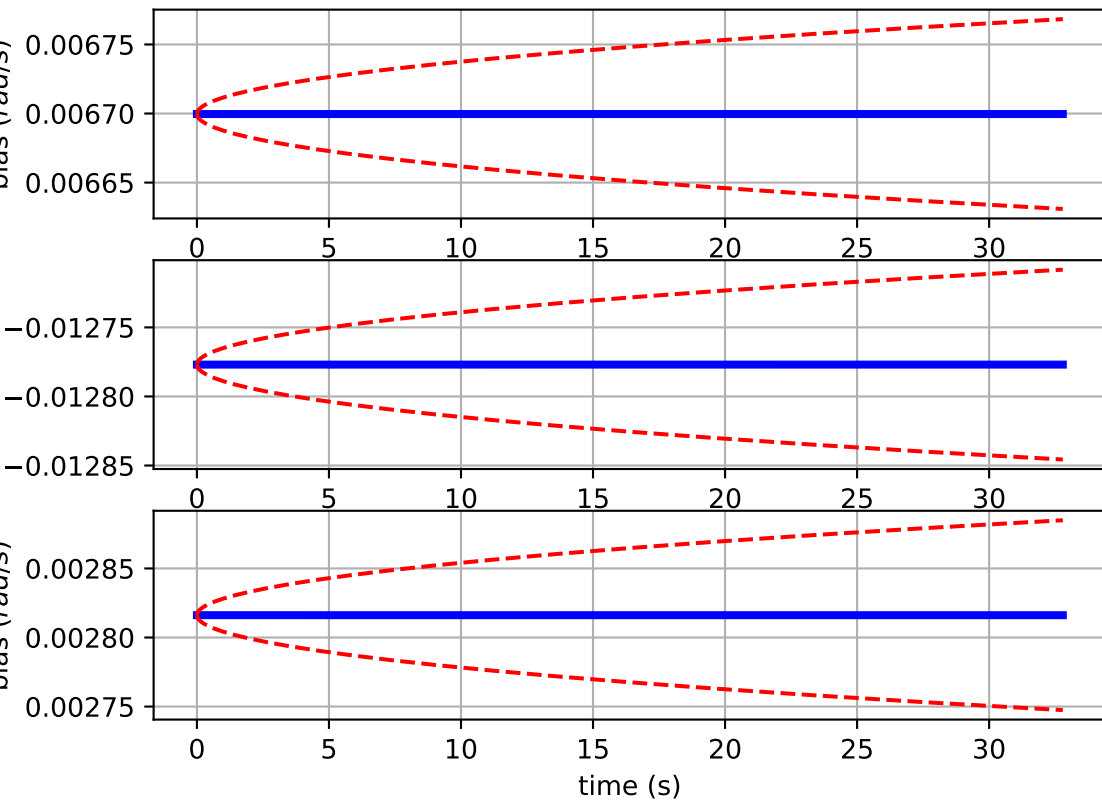
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)





cam0: reprojection errors

