

## Calibration results

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### Normalized Residuals

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Reprojection error (cam0): mean 25.9008365201, median 12.7388888944, std: 40.4459680516

Gyroscope error (imu0): mean 22.3495890093, median 15.9900150652, std: 16.0865532223

Accelerometer error (imu0): mean 26.2332911481, median 21.723982669, std: 17.8422120111

### Residuals

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Reprojection error (cam0) [px]: mean 25.9008365201, median 12.7388888944, std: 40.4459680516

Gyroscope error (imu0) [rad/s]: mean 0.107274469876, median 0.0767495271932, std: 0.0772128949814

Accelerometer error (imu0) [m/s^2]: mean 1.4839790451, median 1.22889403677, std: 1.00930792835

### Transformation (cam0):

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T\_ci: (imu0 to cam0):

[[ -0.08424277 0.99642167 -0.00685673 0.33696385]

[ -0.99178169 -0.08451148 -0.09605674 0.04963892]

[ -0.09629249 -0.00129171 0.99535224 0.19475509]

[ 0. 0. 0. 1. ]]

T\_ic: (cam0 to imu0):

[[ -0.08424277 -0.99178169 -0.09629249 0.09637119]

[ 0.99642167 -0.08451148 -0.00129171 -0.33131146]

[ -0.00685673 -0.09605674 0.99535224 -0.18677129]

[ 0. 0. 0. 1. ]]

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

1.5340591444875307

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

[-0.62613008 0.37217567 -9.77946161]

Calibration configuration

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Camera model: pinhole  
Focal length: [584.7399294374125, 584.117527258626]  
Principal point: [317.85650050808607, 237.29499445403727]  
Distortion model: radtan  
Distortion coefficients: [-0.04635982092303866, -0.10432387263456015, -0.0016201106528649408, -0.0016201106528649408, -0.0016201106528649408, -0.0016201106528649408]  
Type: checkerboard  
Rows  
  Count: 6  
  Distance: 0.07 [m]  
Cols  
  Count: 7  
  Distance: 0.07 [m]

#### IMU configuration

##### =====

##### IMU0:

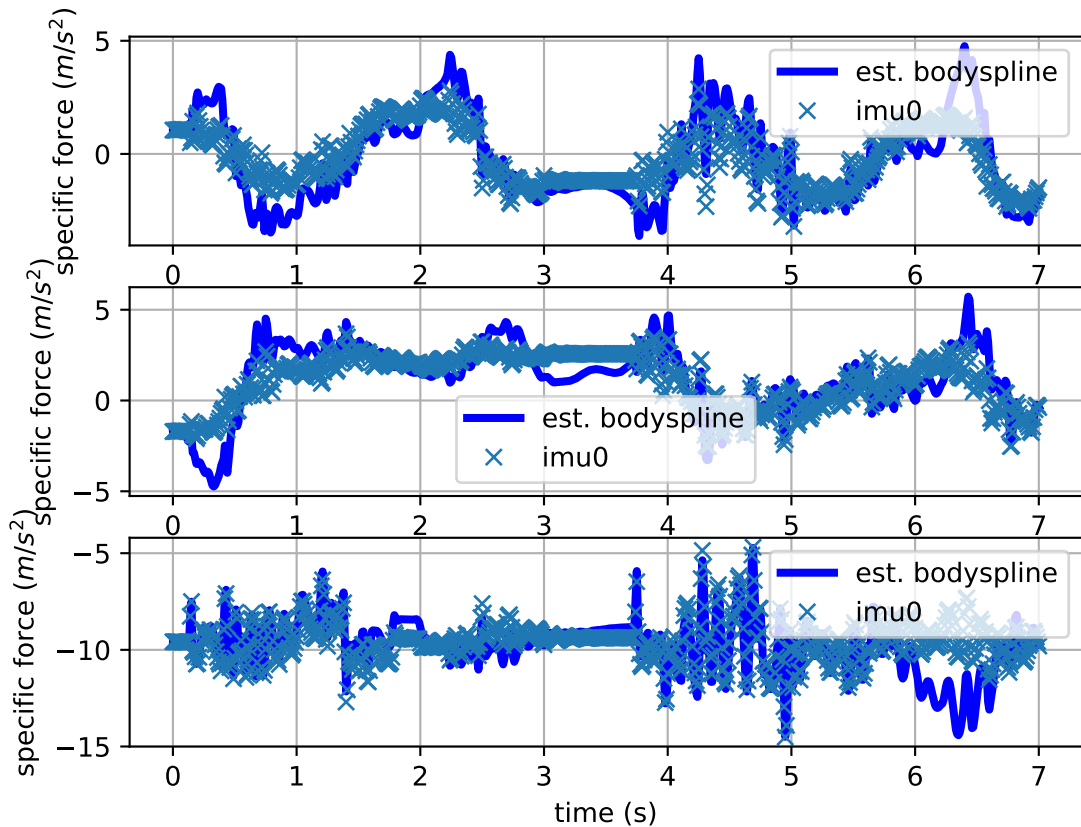
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Model: calibrated  
Update rate: 200.0  
Accelerometer:  
  Noise density: 0.004  
  Noise density (discrete): 0.0565685424949  
  Random walk: 0.006  
Gyroscope:  
  Noise density: 0.0003394  
  Noise density (discrete): 0.00479984083069  
  Random walk: 3.8785e-05

##### T\_i\_b

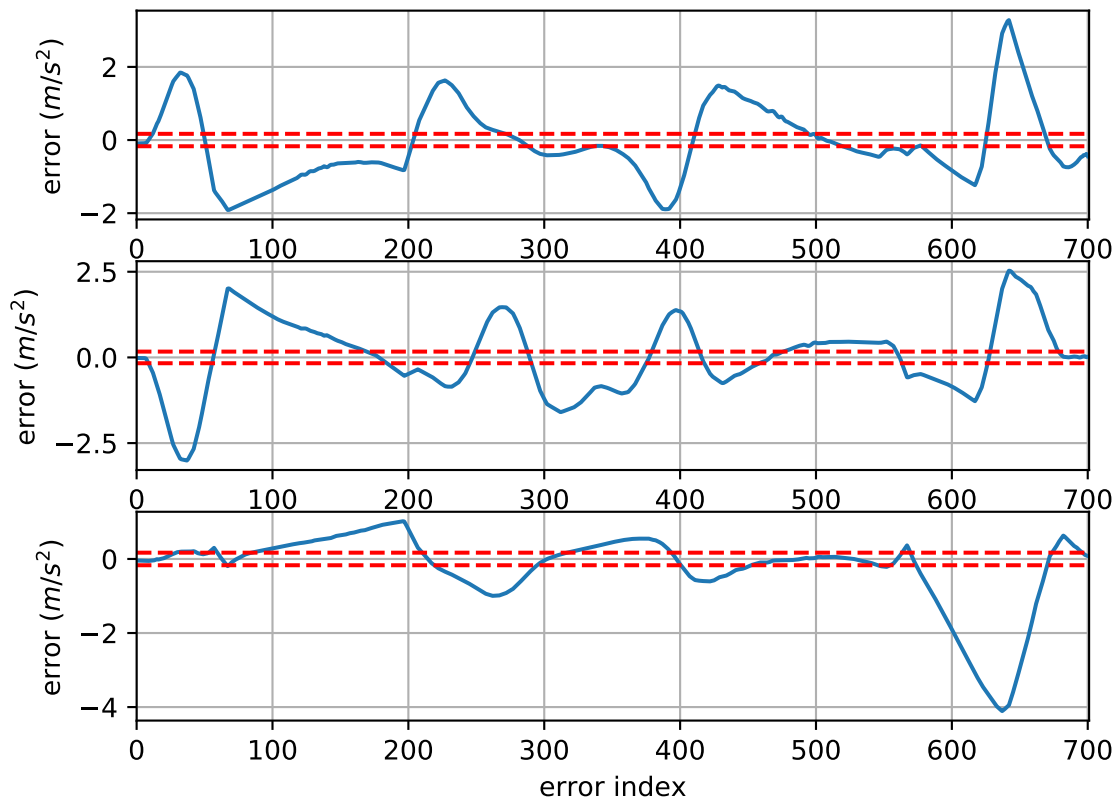
[[1. 0. 0. 0.]  
[0. 1. 0. 0.]  
[0. 0. 1. 0.]  
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

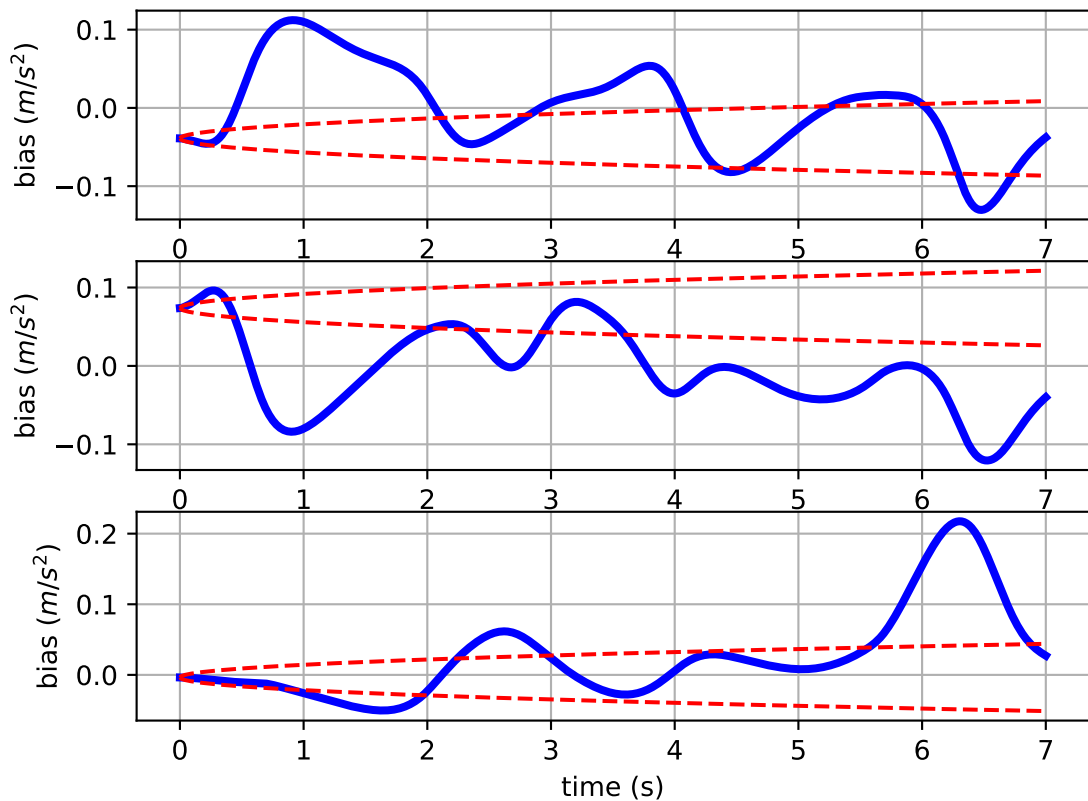
# Comparison of predicted and measured specific force (imu0 frame)



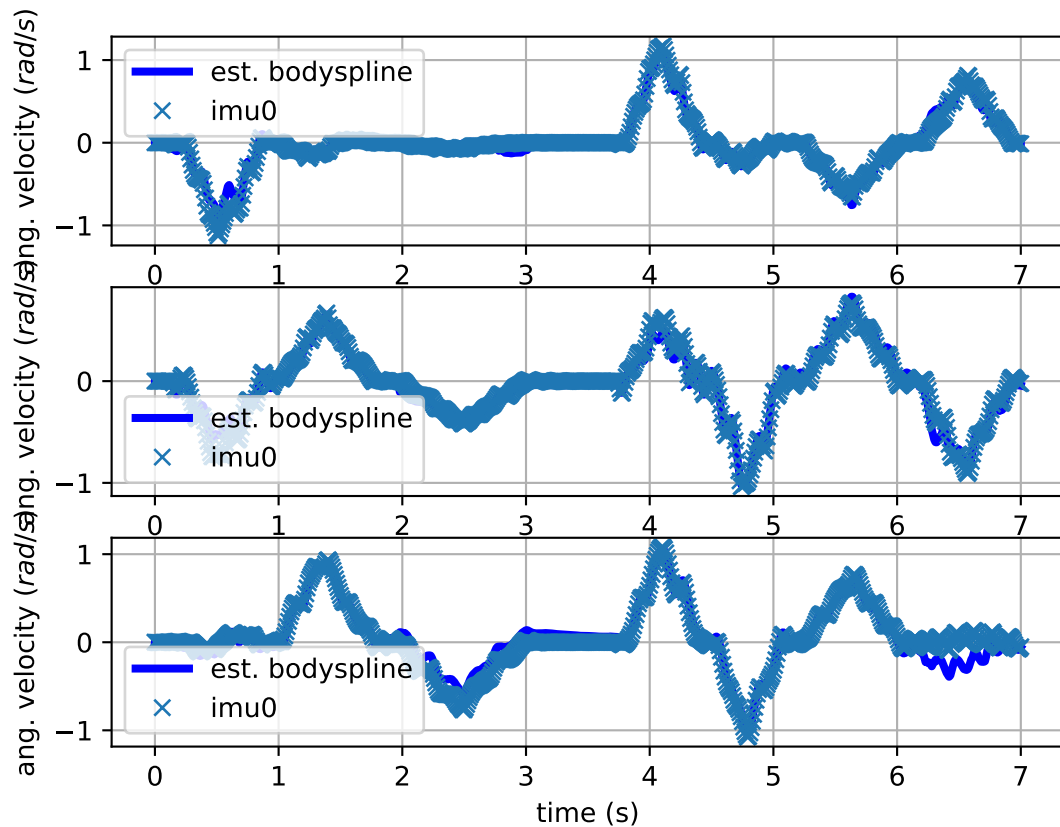
imu0: acceleration error



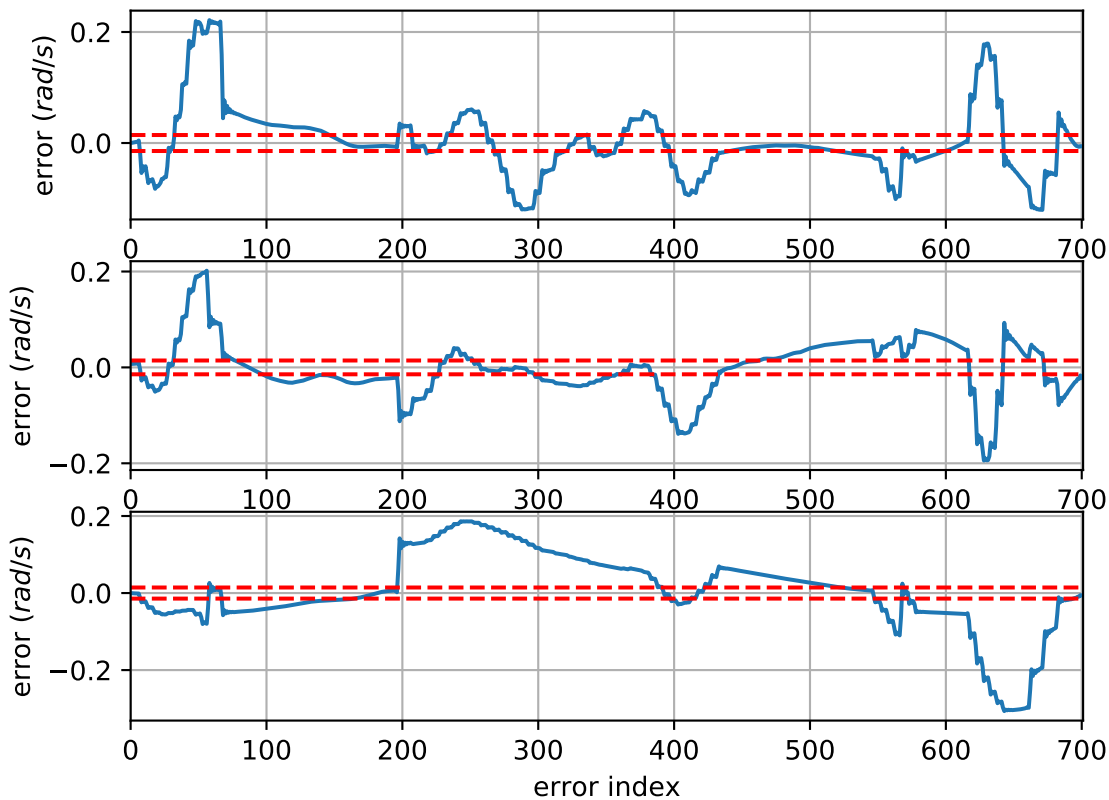
imu0: estimated accelerometer bias (imu frame)



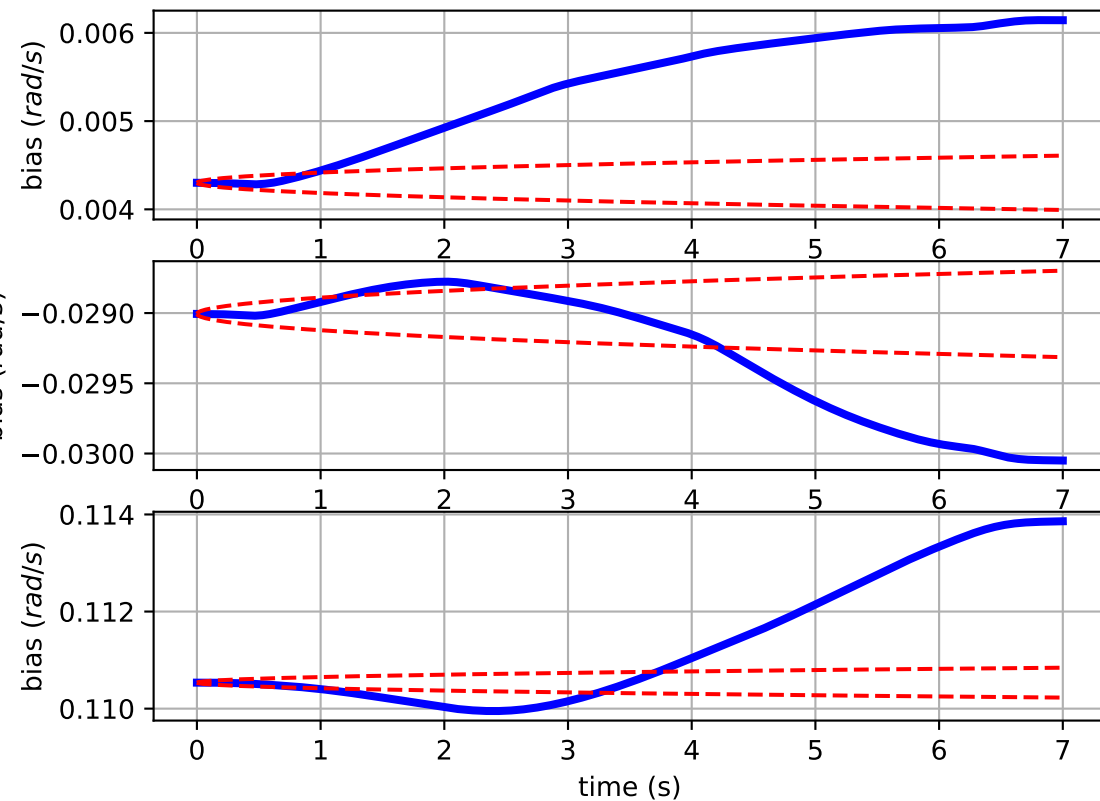
# Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)





cam0: reprojection errors

