

## Calibration results

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### Normalized Residuals

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Reprojection error (cam0): mean 0.250013766955, median 0.173947462123, std: 0.549396960951

Gyroscope error (imu0): mean 1.92392025666, median 1.91118849061, std: 0.696926469769

Accelerometer error (imu0): mean 27.5464737318, median 27.7678184105, std: 1.76236232886

### Residuals

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Reprojection error (cam0) [px]: mean 0.250013766955, median 0.173947462123, std: 0.549396960951

Gyroscope error (imu0) [rad/s]: mean 0.000624309413044, median 0.000620177972895, std: 0.00022615

Accelerometer error (imu0) [m/s^2]: mean 0.921881337735, median 0.929288947526, std: 0.05897992451

### Transformation (cam0):

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T\_ci: (imu0 to cam0):

```
[[ 0.00993097 -0.99995068 0.00010597 0.05953371]
 [ 0.99995019 0.00993086 -0.00099947 0.0003423 ]
 [ 0.00099837 0.00011589 0.99999949 -0.10300257]
 [ 0.         0.         0.         1.         ]]
```

T\_ic: (cam0 to imu0):

```
[[ 0.00993097 0.99995019 0.00099837 -0.00083067]
 [-0.99995068 0.00993086 0.00011589 0.05953931]
 [ 0.00010597 -0.00099947 0.99999949 0.10299655]
 [ 0.         0.         0.         1.         ]]
```

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

0.007134399834684925

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

[-0.08773842 9.80615253 0.00987212]

Calibration configuration

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Camera model: pinhole  
Focal length: [585.7561, 585.7561]  
Principal point: [320.5, 240.5]  
Distortion model: radtan  
Distortion coefficients: [0.0, 0.0, 0.0, 0.0]  
Type: checkerboard  
Rows  
  Count: 6  
  Distance: 0.01 [m]  
Cols  
  Count: 7  
  Distance: 0.01 [m]

#### IMU configuration

##### =====

##### IMU0:

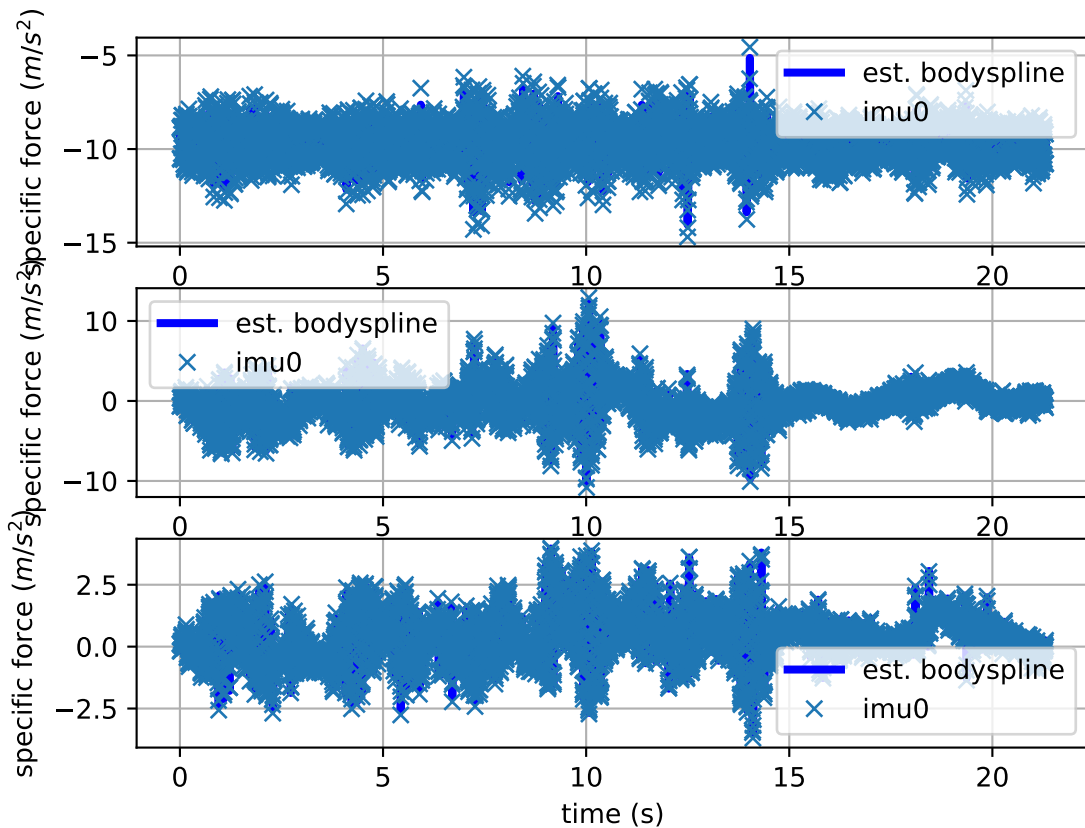
-----  
Model: calibrated  
Update rate: 70.0  
Accelerometer:  
  Noise density: 0.004  
  Noise density (discrete): 0.0334664010614  
  Random walk: 0.006  
Gyroscope:  
  Noise density: 3.8785e-05  
  Noise density (discrete): 0.000324498591291  
  Random walk: 0.0003394

##### T\_i\_b

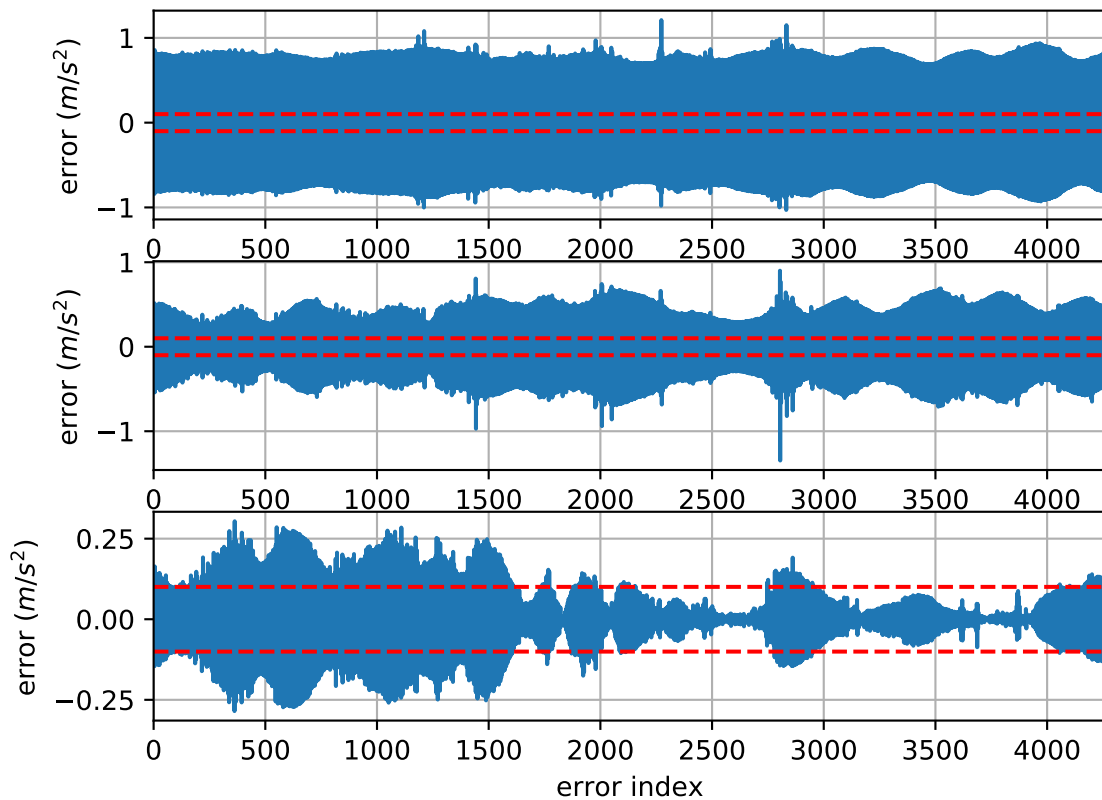
[[1. 0. 0. 0.]  
[0. 1. 0. 0.]  
[0. 0. 1. 0.]  
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

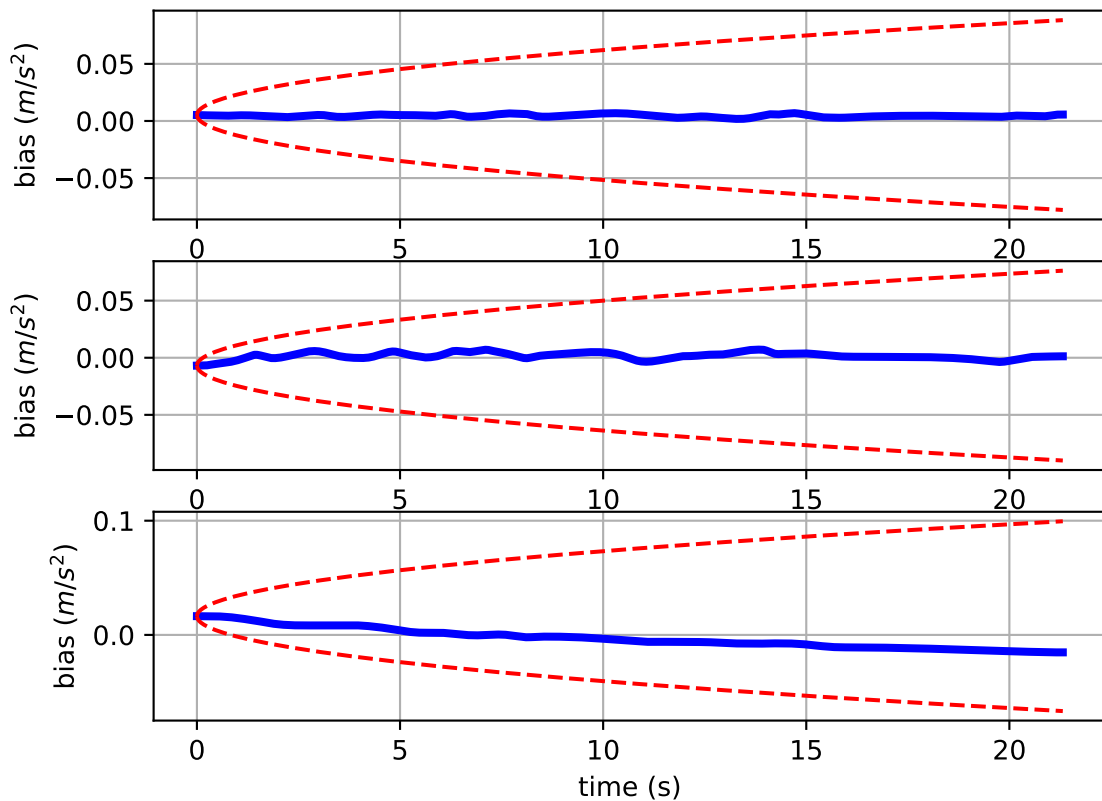
Comparison of predicted and measured specific force (imu0 frame)



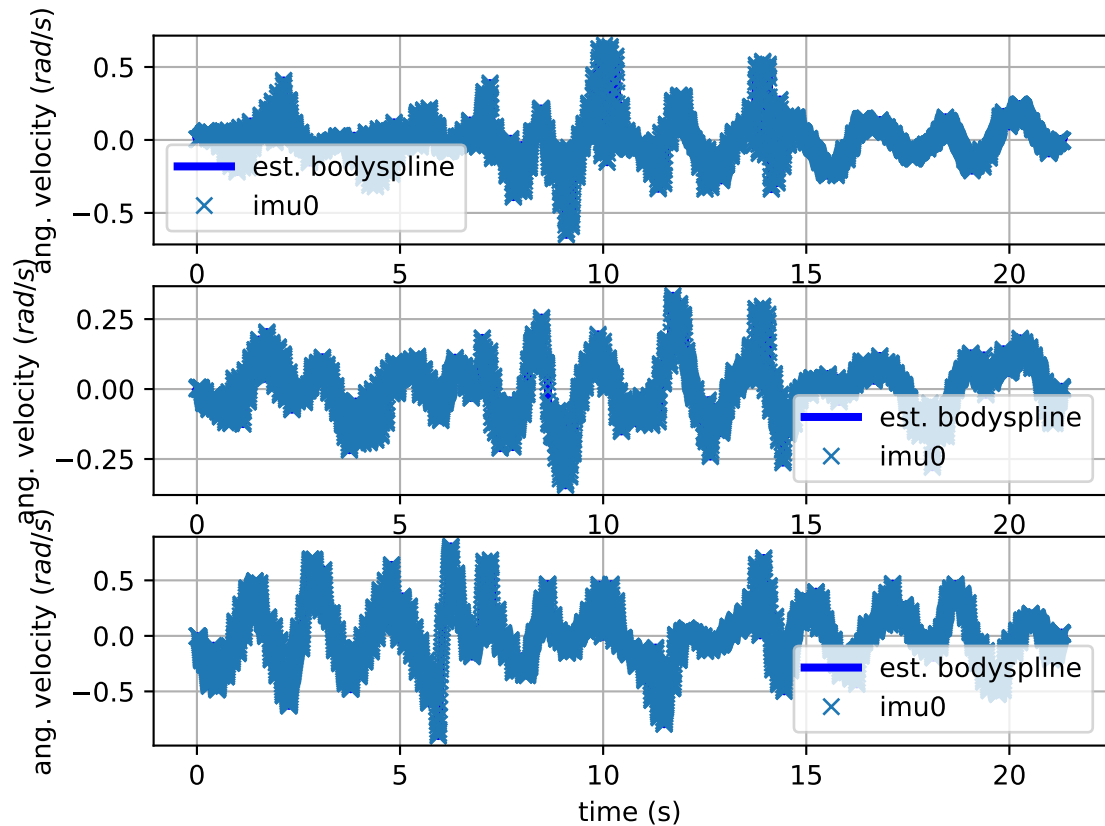
imu0: acceleration error



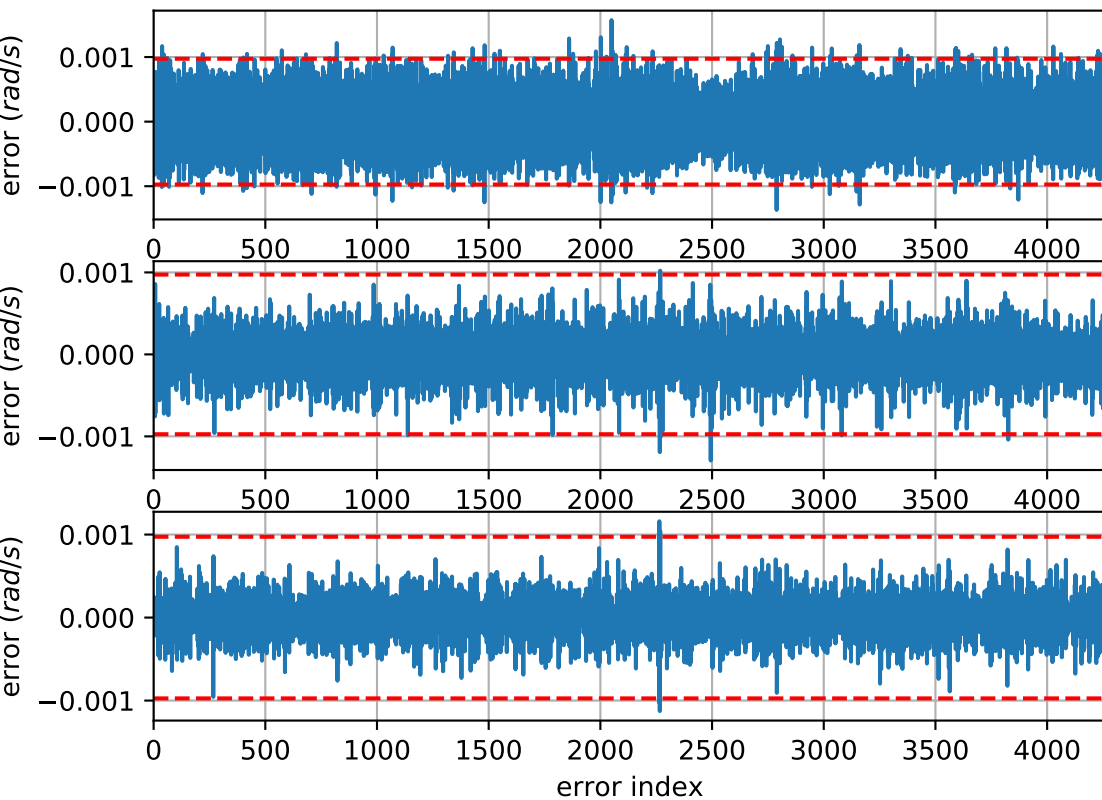
imu0: estimated accelerometer bias (imu frame)



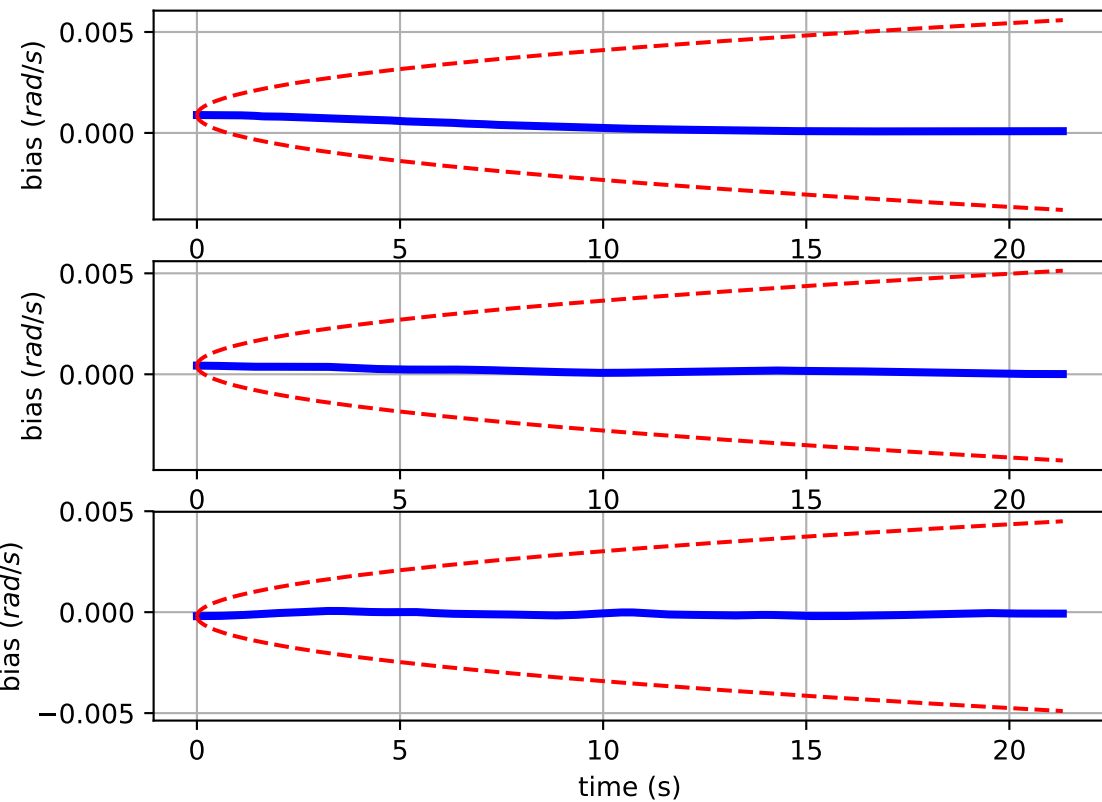
Comparison of predicted and measured angular velocities (body frame)



imu0: angular velocities error



imu0: estimated gyro bias (imu frame)





cam0: reprojection errors

