|  |  |  |
| --- | --- | --- |
|  | Simple Average | Kalman filter |
| Estimator |  |  |
| Recursive estimator |  |  |
| Innovation form | - |  |
| Gain |  |  |
| Estimator error |  |  |
| Mean | Unbiased | Unbiased |
| Variance |  |  |

1. Model:
2. Measured data :
3. With respect to Gain
   1. If we know
4. In the simple average case , independent of noise characteristic
5. In the Kalman case:

Let pick up as then

1. In conclusion

The two cases are the equivalent.

* 1. If we know but is time varying ,

1. In the simple average case , independent of noise characteristic
2. In the Kalman case:
3. In conclusion:

They are different. With respect to the error variance, The Kalman is of the lowest

Variance which is better than the simple.

* 1. If we do not know we can not say about which one is better.

So to speak, The gain is recursively calculated so that it may be better.(see. Matlab)

* Problem\_1:

Model: ;

Noise is

Plot the variance of the simple and kalman.