Supplement:

1. Scalar case (3.14)
   1. If the noise is very small, i.e.,

* The MV is only dependent of the measurement
  1. If the noise is very large, i.e.,
* The MV is only dependent of the state regardless of the measurement

1. Batch process / recursive process

Example: a random process as

Find the average of

* 1. Batch Process
  2. Recursive process

Define

Then

* 1. Merits for recursive way
* The memory size is lower than the batch type
* The result can be acquired at every step, which is more informative.

1. (3.20) example

3.1 two measurements

3.2 Three measurements

1. Recursive M.V. estimator

4.1 k=1,

4.2 k=2