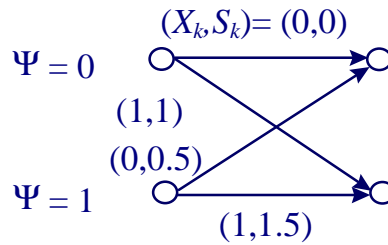


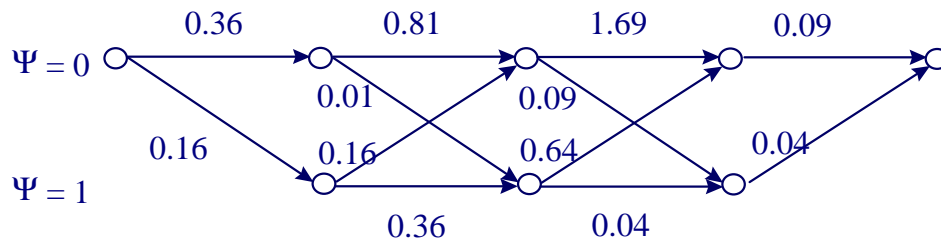
Solution:

The shift register and state transition diagram is the same as in Lee-Messerschmitt (example 9.25)

One stage of the trellis:

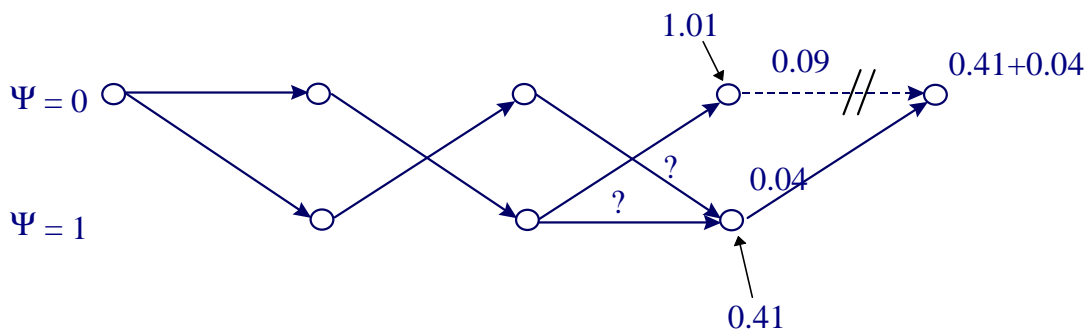
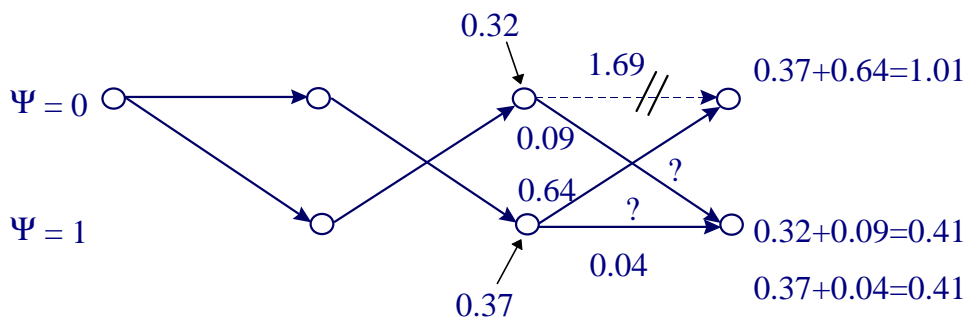
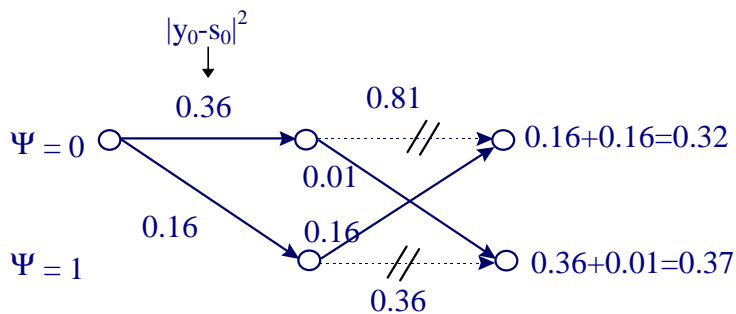


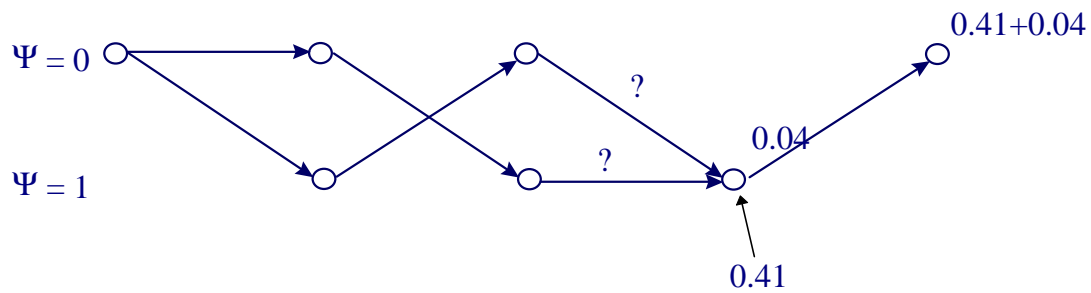
Whole trellis:



Observations: 0.6 0.9 1.3 0.3

Viterbi algorithm:



*Detection:*

We see that there is two possible paths through the trellis which have the same path metric!

$$\mathbf{y}=\{0,1,1,0\} \text{ or } \mathbf{y}=\{1,0,1,0\}!!!$$

Here, the algorithm fail to point out one solution. If we want to have a answer to what is the transmitted sequence, we can say that most probably one of the two above!

Note:

This situation is not likely to happen in practice due to the use of higher precision!