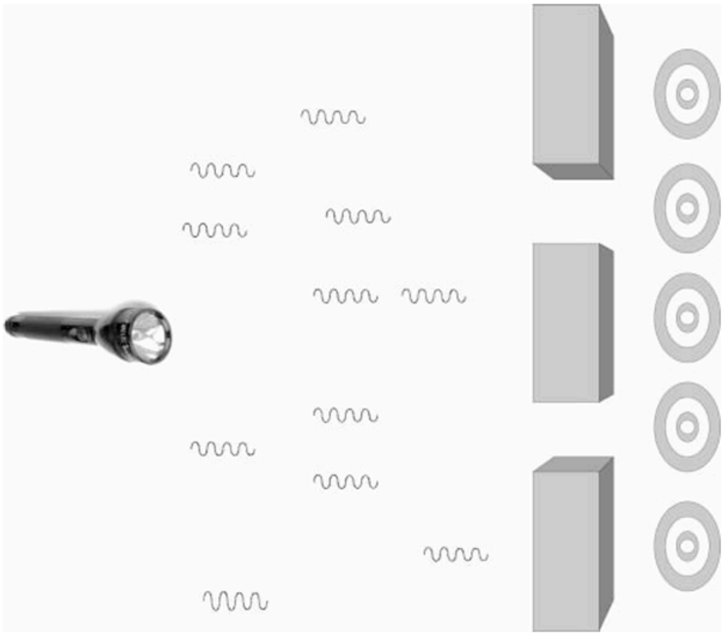


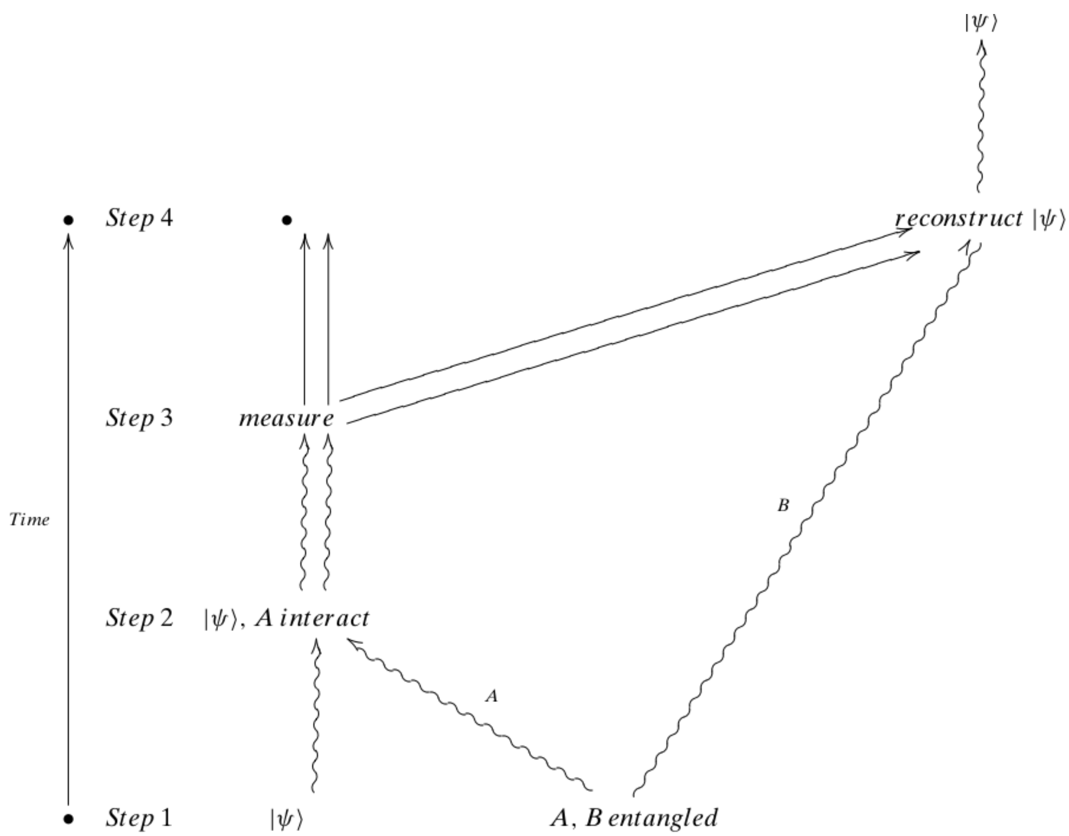
States:
Multiply our starting state withA A.However,A A=A2=I4.

p(Ωjk | Zk) = Pk i = η”·PNdetl´aser det l´aser · (1 − Pdet l´aser)NTGT l´aser−Ndet l´aser · βNfal l´aser fal l´aser · βNnew l ´aser · · · · PNdet visi´ on det visi´on · (1 − Pdet visi´on)NTGT visi´ on−Ndet visi´ on · βNfal visi´ on new l´aser · fal visi´on · βNnew visi´ in PNdet ZigBee new vision · det ZigBee · (1 − Pdet ZigBee)NTGT ZigBee−Ndet ZigBee · βNfal ZigBee new ZigBee · Nl´aser(Zm − H¯ x,B) · Nvisi´ on(Zm − H¯ x,B) · NZigBee(Zm − H¯ x,B) · Pk−1 fal ZigBee · βNnew ZigBee fnc (t) · fnd(t) i (5.23) B =H¯ PHT +R

Where, Pik is the probability of the current hypothesis; η” is the normalization factor; Ndet laser, Ndet vision and Ndet ZigBee are the number of detections for laser, vision and ZigBee;

- NTGT Laser, NTGT Vision and NTGT ZigBee are the number of confirmed tracks for lasers, vision
- and ZigBee; Nfal Lasers, Nfal Vision and Nfal ZigBee are the number of false alarms for lasers, vision and
-
- ZigBee; Nnew Lasers, Nnew Vision and Nnew ZigBee are the number of new laser, vision, and ZigBee tracks; Lasers Pdet, Vision Pdet, and ZigBee Pdet are the detection probabilities of laser, vision, and ZigBee respectively; (1 − Laser Pdet), (1 − Vision Pdet) and (1 − Pdet ZigBee) are the non-detection probabilities for laser, vision, and ZigBee; βfal laser, βfal vision, and βfal ZigBee are the densities of the Poisson distributions corresponding to false alarms
- for laser, vision, and ZigBee; βnew laser, βnew vision and βnew ZigBee are the densities of the Poisson distributions corresponding to the new tracks for laser, vision and ZigBee;

fnc(t) is the prior function for the confirmation of the tracks; fnd(t) is the prior function previous function
for the elimination of the tracks; Nl´aser(Zm−H¯ x,B),Nvisi´ on(Zm−H¯ x,B) and NZigBee(Zm−
H¯ x,B) are the probability distributions normal laser detections



Definition 10.3.2 Ak−quantum data compression scheme for an assigned quantum source is specified by a change-of-basis unitary transformation QC : C2n −→ C2n and its inverse QC−1 : C2n −→ C2n.

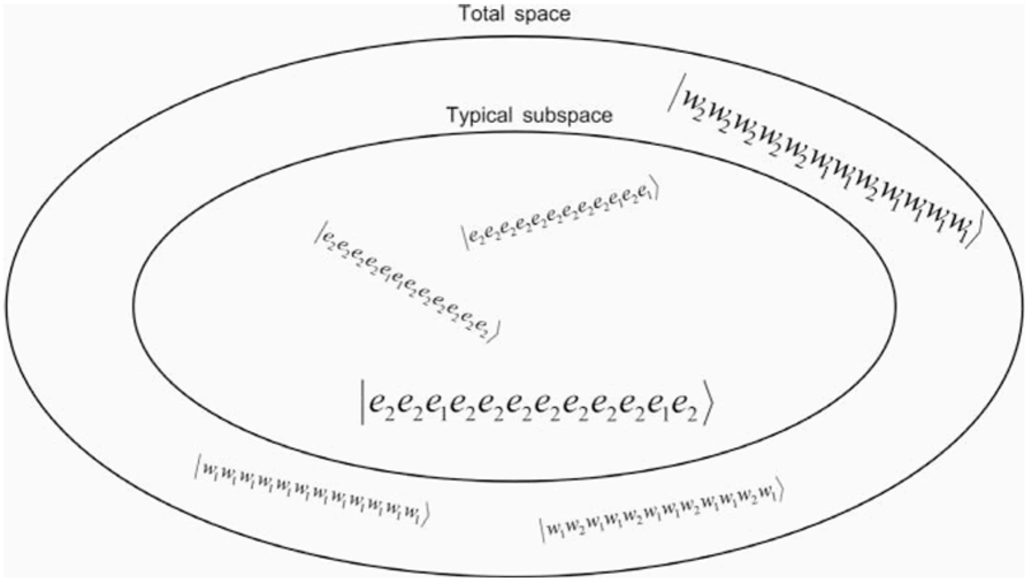


Figure 10.6. Source as in Example 10.2.2: $p(|w_1\rangle) = \frac{1}{3}$, $p(|w_2\rangle) = \frac{2}{3}$, $n = 12$, $H(S) = 0.54999$.

The fidelity of the quantum compressor is defined as follows: consider a message from the source of length n, say, |m.Let Pk(QC(|m) be the truncation of the transformed message to a compressed version consisting of the first k qubits (the length of Pk(QC(|m) is therefore k). Now, pad it with n−k zeros, getting Pi(QC(|m)00...0. The fidelity is the probability QC−1(|Pk(QC(|m)00...0)|m |2

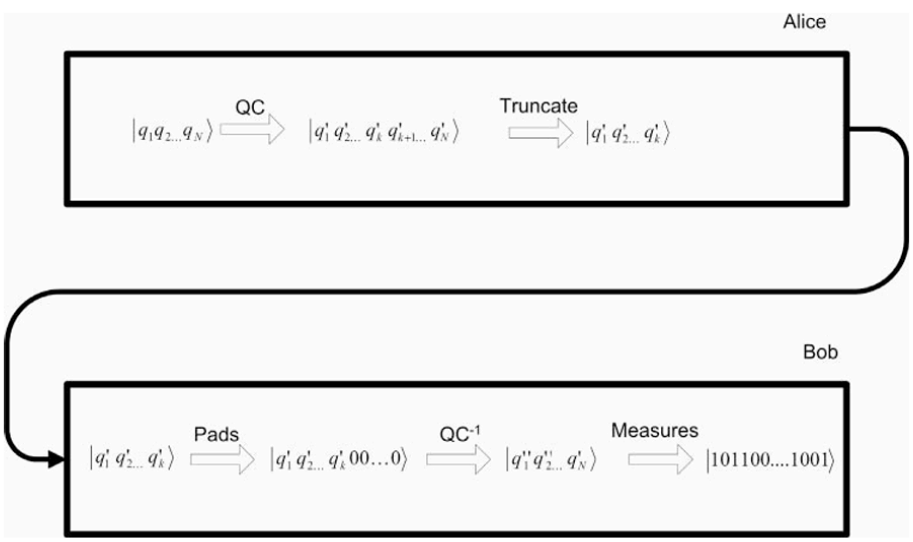


Figure 10.5. A quantum compression scheme.

Detector;

Pk i = η″·fnc(t)·PNet det · (1 −Pdet)NTGT−Not · βNfal fal ·
Ndetector(Zm − H¯ x,B) · Pik−1 · fnd(t) · βNnew new ·