

## Appendix C

Simulating the E-91 Protocol for Quantum Key Destibution

Using 2000 sets of entangled particles

Eve is intercepting 100% of the particles

We are attempting to detect her with a tolerance of 10.0%

## Generating and distributing entangled particles...

All particles have been received and measured...

Alice and Bob announce their off-axis results. Calculating the big S value to detect Eve.

!!!! Eve Detected !!!!

An S value of -0.823687363874 was found. This deviation from the true value of -2.82842712475 is 7.09 times higher than the Eve tolerance of 10.0%.

Eve intercepted 2000 particles and chose the correct analyzer angle 33.0% of the time.

The calculated private key is 682 bits long

The generated private key is

[illegible]

Simulating of the E-91 Protocol has concluded

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Simulating the E-91 Protocol for Quantum Key Distribution

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Using 2000 sets of entangled particles  
Eve is intercepting 0% of the particles  
We are attempting to detect her with a tolerance of 10.0%  
Generating and distributing entangled particles...  
All particles have been received and measured...  
Alice and Bob announce their off-axis results. Calculating the big S value to detect Eve.  
An S value of -2.76094440268 was found. This is within 2.0% of the expected value -2.82842712475.  
This is below the Eve Detection tolerance of 10.0% and therefore we assume no Eve presence  
The calculated private key is 627 bits long  
Enable debugging to see the full key.

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Simulating of the E-91 Protocol has concluded

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Simulating the E-91 Protocol for Quantum Key Distribution

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Using 2000 sets of entangled particles  
Eve is intercepting 40.0% of the particles  
We are attempting to detect her with a tolerance of 10.0%  
Generating and distributing entangled particles...  
All particles have been received and measured...  
Alice and Bob announce their off-axis results. Calculating the big S value to detect Eve.  
!!!! Eve Detected !!!!  
An S value of -2.04181044976 was found. This deviation from the true value of -2.82842712475 is 2.78 times higher than the Eve tolerance of 10.0%.  
Eve intercepted 999 particles and chose the correct analyzer angle 36.0% of the time.  
The calculated private key is 683 bits long  
Enable debugging to see the full key.

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Simulating of the E-91 Protocol has concluded

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