Matched Correlator

# Task 1

1. *Derive the distribution of V and v = V=\_V , where \_V is the standard deviation of*

*RV V . Use the parametrization in terms of S*

1. *Describe fully what you are simulating.*
2. *Show figure*
3. *Chi sqared result*
4. *Erfc stuff at the end?*

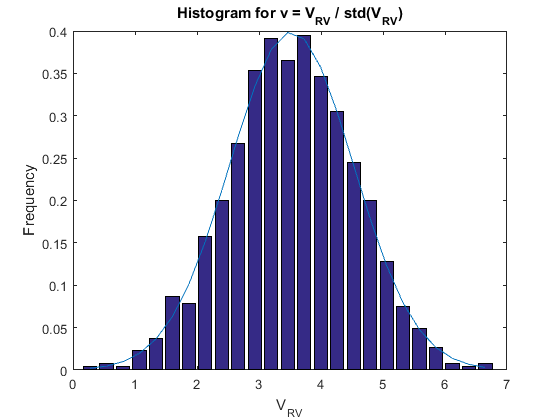


Figure : Deriving V distribution

Chi Squared test result: h = 0

# Task 2

1. *For your system scaling, construct a table of threshold values giving the pairs*
2. *Construct some type of a graphical display of this table and comment on the increase in v0 with the decrease in Pfa.*
3. *Using these thresholds, derive Pd and plot Pd versus S in dB over a reasonable range*
4. *Explain the offsets of the plots, that is, why each plot is roughly a shift or offset from the others. These results only apply to a fixed scaling, changing the variance will require changing he threshold.*

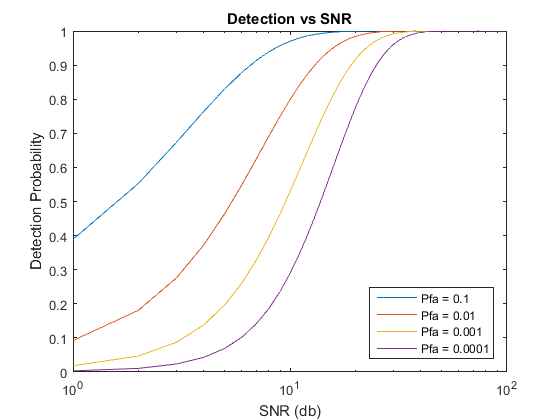


Figure : Pd vs S in dB