

(* Define the MIMO channel capacity expression under Hoyt fading *)

```
C_lsnr_expr[NT_, NR_, SNR_, λ_, q_] :=  
  NT * (Log2[1 + SNR/NR λ] - Log2[E] (2 q (NT - NR)/(NR λ)))
```

(* Define the eavesdropper's capacity expression in low SNR regime *)

```
C_eve_expr[NR_, SNR_, λ_E_] := NR * Log2[1 + SNR/NR λ_E]
```

(* Define the secrecy capacity expression *)

```
C_sec_expr[NT_, NR_, SNR_, λ_B_, λ_E_, q_] :=  
  Max[C_lsnr_expr[NT, NR, SNR, λ_B, q] - C_eve_expr[NR, SNR, λ_E], 0]
```

(* Perform numerical evaluation using Monte Carlo simulation *)

```
num_trials = 10^5;  
simulated_secrecy_capacity = Table[  
  Module[{λ_B, λ_E},  
    λ_B = RandomVariate[NormalDistribution[0, 1]];  
    λ_E = RandomVariate[NormalDistribution[0, 1]];  
    C_sec_expr[NT, NR, SNR, λ_B, λ_E, q] // N  
  ],  
  {num_trials}  
];
```

(* Plot the results *)

```
ListLinePlot[Transpose[{SNR_values, simulated_secrecy_capacity}], Mesh -> All,  
  Frame -> True, FrameLabel -> {"SNR", "Secrecy Capacity"},  
  PlotLabel -> "Secrecy Capacity of MIMO Channel under Hoyt Fading",  
  PlotRange -> All]
```