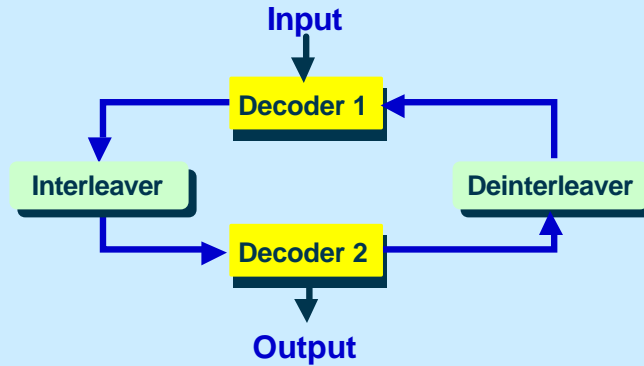




## Turbo Decoder

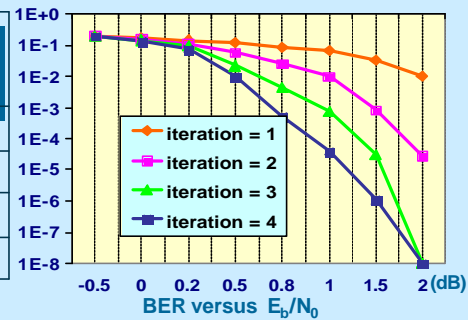
- Our turbo decoder consists of two concatenated log-MAP decoders, which decode the coded input iteratively.



## Turbo Decoder with Variable Iteration

- The power dissipation is proportional to the number of iterations of the decoder.
- Variable number of iterations:
  - ◆ Determine the number of iterations according to the channel condition.

Channel Condition	Number of Iterations
Excellent	1
Good	2
Moderate	3
Bad	4



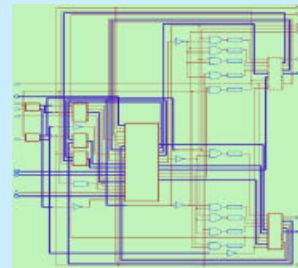


## Synthesized Turbo Decoder

- Design specification:
  - ◆ **Frame length:** 10 ms, 1024 bits per frame
  - ◆ **Code rate:** 1/3
  - ◆ **Constraint length:** 5
  - ◆ **Data rate:** 128k bps
- Target technology: TSMC 0.35 mm



Simulation of the synthesized Turbo Decoder



Synthesized circuit