

COMPUTATIONAL FLUID DYNAMICS

ASSIGNMENT – 2



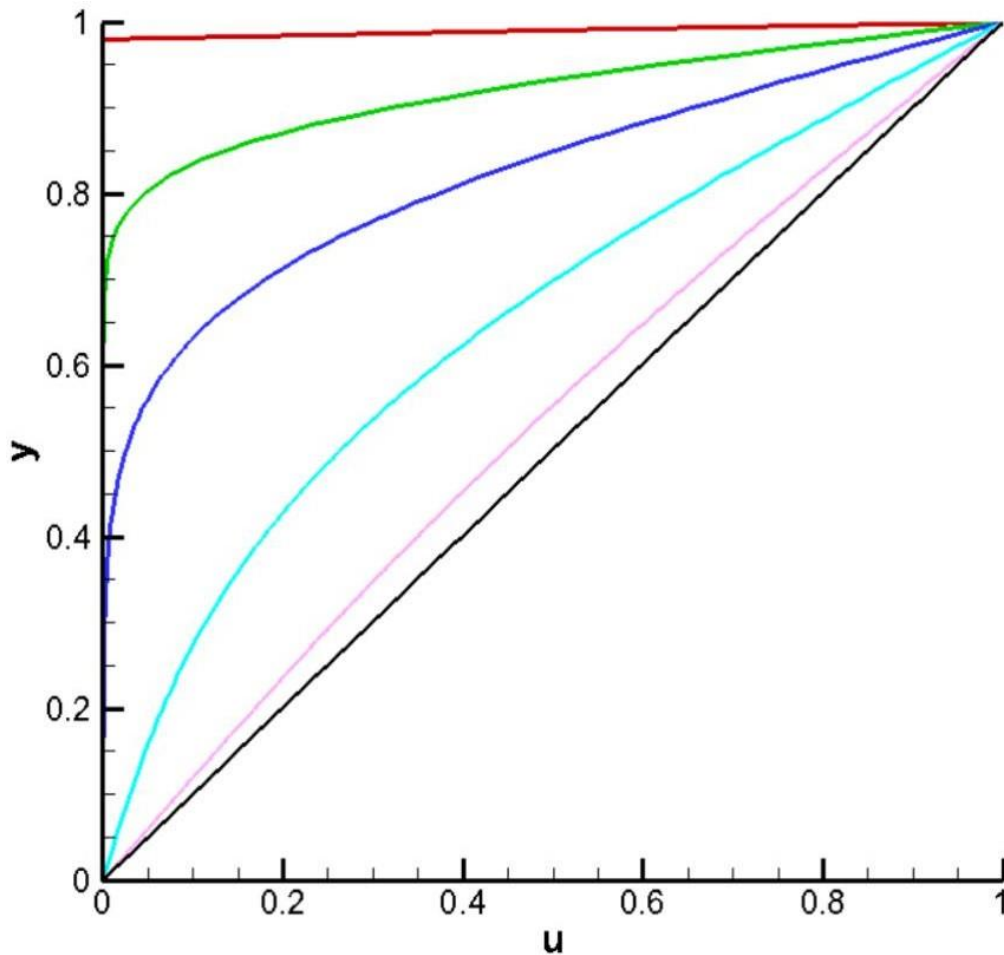
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Branch – Fluids & Thermal

(1). FTCS



1) $t = 0$: Number of iterations = 1

2) $t = 0.5$: Number of iterations = 101

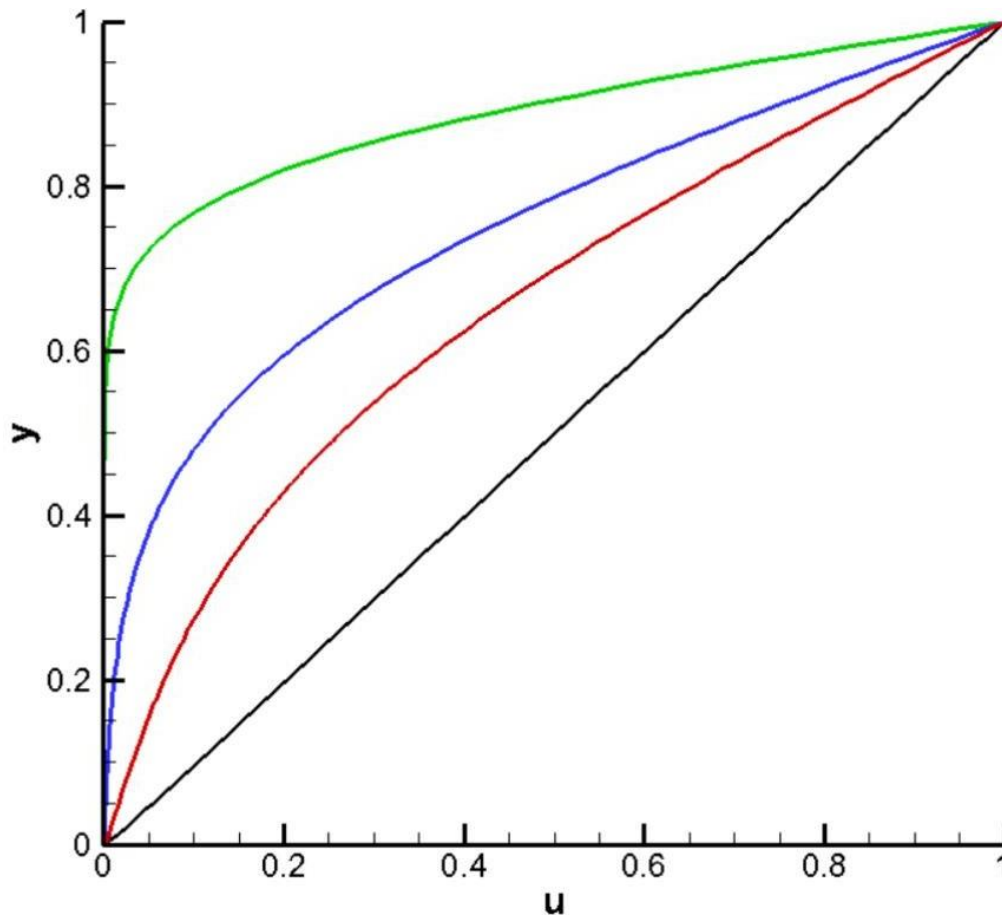
3) $t = 2.5$: Number of iterations = 500

4) $t = 10$: Number of iterations = 2000

5) $t = 25$: Number of iterations = 5001

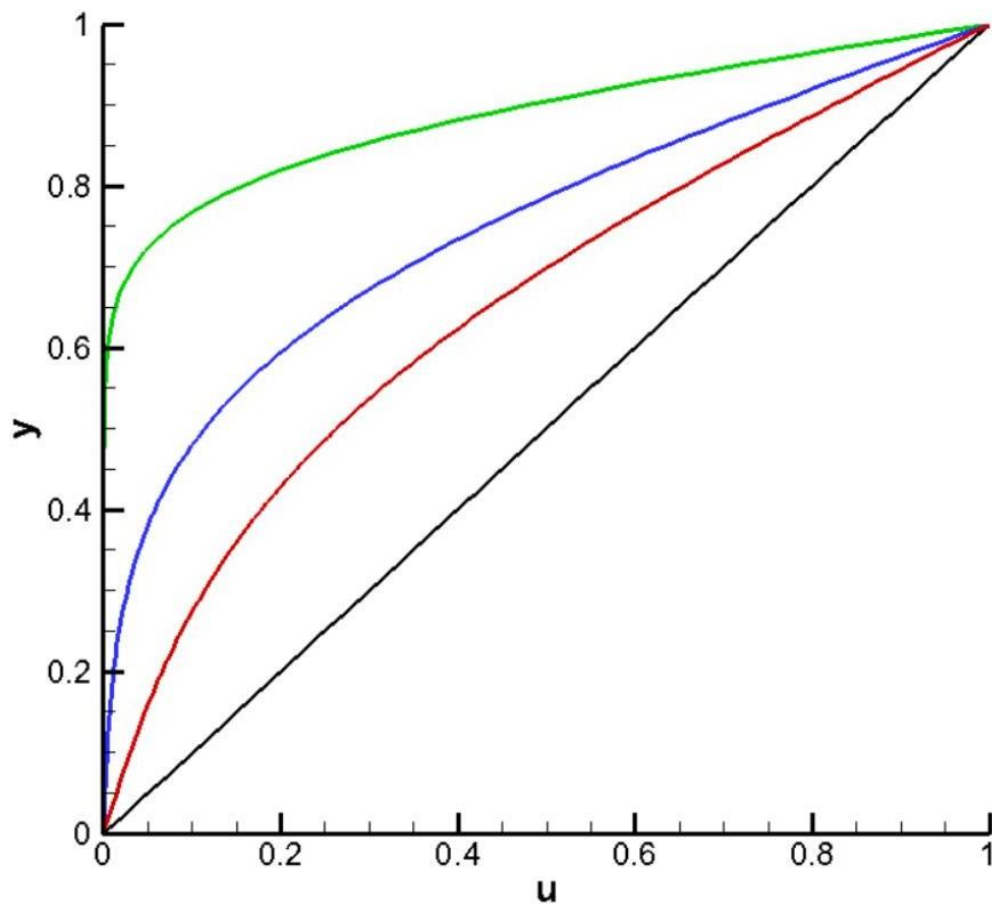
6) Steady state : error is order of 0.000001, Number of iterations = 11635

2 (b). BTCS (Tridiagonal Matrix Algorithm)



- 1) $t = 1$: Number of iterations = 101
- 2) $t = 5$: Number of iterations = 501
- 3) $t = 10$: Number of iterations = 1001
- 4) Steady state : Error is order of 0.000001 , Number of iterations = 6226

2 (c). Crank Nicolson



1) $t = 1$: Number of iterations = 101

2) $t = 5$: Number of iterations = 501

3) $t = 10$: Number of iterations = 1001

4) Steady state : Error is order of 0.000001 , Number of iterations = 6187