

Numerical Methods for ODEs

Embedded Runge-Kutta-Methods

a) Runge-Kutta-Fehlberg 2(3) (b) Runge-Kutta-Fehlberg 4(5)

0		
1	1	
1/2	1/4	1/4
c	1/2	1/2
\hat{c}	1/6	1/6 4/6

0					
1	1				
1/4	1/4				
3	3	9			
8	32	32			
12	1932	7200	7296		
13	2197	2197	2197		
1	439	-8	3680	-845	
	216		513	4104	
1	-8	2	-3544	1859	11
2	27		2565	4104	40
c	25	0	1408	2197	1
	216		2565	4104	5
\hat{c}	16	0	6656	28561	9
	135		12825	56430	50
					55

(c) Dormand-Prince 5(4)

0						
1	1					
5	5					
3	3	9				
10	40	40				
4	44	56	32			
5	45	15	9			
8	19372	25360	64448	212		
9	6561	2187	6561	729		
1	9017	355	46732	49	5103	
	3168	33	5247	176	18656	
1	35	0	500	125	2187	11
	384		1113	192	6784	84
\hat{c}	35	0	500	125	2187	11
	384		1113	192	6784	84
c	5179	0	7571	393	92097	187
	57600		16695	640	339200	2100
						40