Verner's "most efficient" 10 stage combined order 6 and 7 Runge-Kutta scheme

The following ("most efficient") scheme comes from Jim Verner's website: http://www.math.sfu.ca/~jverner/.
See: J.H. Verner, SIAM Journal of Numerical Analysis 1978, 772-790, "Explicit Runge-Kutta methods with estimates of the Local Truncation Error."

The nodes of the scheme are:

$$c_2 = \frac{1}{200},\ c_3 = \frac{1633}{15000},\ c_4 = \frac{1633}{10000},\ c_5 = \frac{911}{2000},\ c_6 = \frac{3872020203200}{6348224000949},\ c_7 = \frac{221}{250},\ c_8 = \frac{37}{40},\ c_9 = 1,\ c_{10} = 1.$$

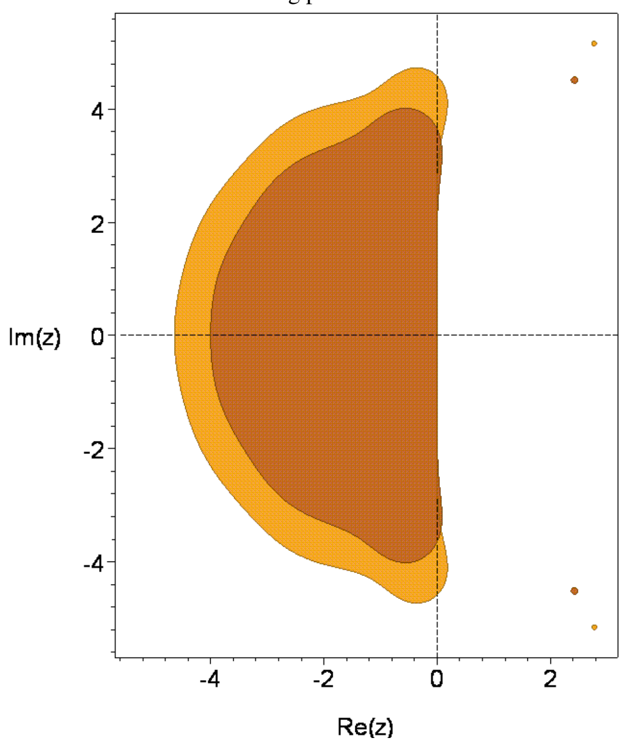
The principal error norm, that is, the 2-norm of the principal error terms is: $0.2043042248 \times 10^{(-4)}$.

The principal error norm of the order 6 embedded scheme is: $0.3360915091 \times 10^{(-3)}$.

The maximum magnitude of the linking coefficients is: 187.2321332.

The 2-norm of the linking coefficients is: 264.6559581.

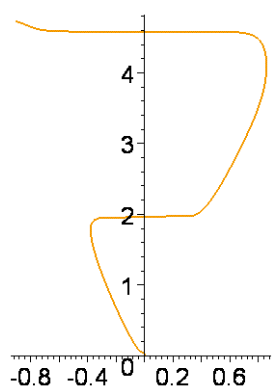
The stability regions for the two schemes are shown in the following picture.



The stability region of the order 6 scheme appears in the darker shade.

The real stability intervals of the order 7 and 6 schemes are respectively $[-4.6408, 0]$ and $[-4.0015, 0]$.

The following picture shows the result of distorting the boundary curve of the stability region of the order 7 scheme horizontally by taking the 11th root of the real part of points along the curve.



The stability region intersects the nonnegative imaginary axis in the interval: $[1.9601, 4.5851]$.

The coefficients in exact form are:
c[2]=1/200,
c[3]=1633/15000,
c[4]=1633/10000,
c[5]=911/2000,
c[6]=3872020203200/6348224000949,
c[7]=221/250,
c[8]=37/40,
c[9]=1,
c[10]=1,

a[2,1]=1/200,
a[3,1]=-2421739/2250000,
a[3,2]=2666689/2250000,
a[4,1]=1633/40000,
a[4,2]=0,
a[4,3]=4899/40000,
a[5,1]=13638791441/21333512000,
a[5,2]=0,
a[5,3]=-10484391993/4266702400,
a[5,4]=1212514581/533337800,
a[6,1]=-1056642053745357304691109346738471479179459858675794230109280 0/
394547882801318971844148926808049486721730632393403493640847 9,
a[6,2]=0,
a[6,3]=523102151029995496025158506049572048987411005579840000000 0/
481214639347870437668189933904195007588401795820714103721,
a[6,4]=-531918228479019868584637668959227158406893912796002976000000 00/
632749129278514838489902944090626015477989521324656974982742 9,
a[6,5]=178128752762233182461613996826047114227340395310272000000 0/
216161110940468505275381411955634984094676377307875985617 1,
a[7,1]=40316732614812499600926954604381622079953/66220270152513982892708450127234000000000,
a[7,2]=0,
a[7,3]=-3102627096349187411472/1251537011523355 32175,
a[7,4]=245125936118118141970278473100117479077 76/11964079562428485789476682997295177127 75,
a[7,5]=-27992220377104300725776520574439264/1469793467202428792431006995474081 9,
a[7,6]=389458802019570496364735131347538916410259802164289069442088 1/
388578007615308270390987272625621205760265745621219820000000 0,
a[8,1]=21947383056483447312685165800859971166991364345 7/181485819187768978511041052627150704498547200 00,
a[8,2]=0,
a[8,3]=-1086192499072280812 5/21765861069971396 9,
a[8,4]=1194803188479053664864904986991265166577791325925 00/289597896952964009970168941474773070003727259151 9,
a[8,5]=-16685485806522902799369949364499724119504036 25/37424259155933903542493121367406546804189054 2,
a[8,6]=382577211027880150649972047636222831329368259132466549624932663099642004731882553 17/
188006090832664379757493415396167480504102015528641101847254321407373917453196800 00,
a[8,7]=-5000961050363918975377145582036 25/5080166748283963062825254164179392,
a[9,1]=730887588666056085818235941592570420171397582 91/720415684202668262584953883711697161524184640 0,
a[9,2]=0,
a[9,3]=-692627137711066090559010000 00/162347844381354805103942822 9,
a[9,4]=146754907556729099980800095374774548138146048651880000 00/
410204279941884058406992680456716961361878302419014157,
a[9,5]=-56001310541527335660935463926718909867728400000/1291484253422664978897396316379385025982842830 7,
a[9,6]=16587901117132123435504327827880253868612510603318849874478396793780790882622281913204203180 59/
82916768386065910232964466024339431697491185081762593470308207160837192227212437857083336640 0,
a[9,7]=397383910096482616626611556102242919581343750/113994543571926224731227483847512803977839390 7,
a[9,8]=-1592494645385168399657331755531022525410880 0/587185948355654362637674429117460354348250 67,
a[10,1]=-1494653962153743402065623557194510164293064611 1/332010640625300658857148487489318781645129600,
a[10,2]=0,
a[10,3]=1711189891552321390530000 00/913940284754207909241943,

a[10,4]=-250906345110237533448815794107434670644623116000000/1630126656666301353726306757388291345384354510761,
a[10,5]=100053022832376562190601031855550739901200000/5412177019773639317674437354179369686847329,
a[10,6]=-74112454237042085088149825369523080177884026025788117678315937874990676293 0019/
104572466684527096537276822312914502674692290031200239724554350786783199401600,
a[10,7]=61868781182570033929134892454042771640656250/4741008945163717994109333420532211090590 0061,
a[10,8]=0,
a[10,9]=0,

b[1]=23316791871424559928103/494567385514963690893600,
b[2]=0,
b[3]=0,
b[4]=16798589731064919450625000000000000000/652486332022351662028939973252423307,
b[5]=11463935126317830668000000000000/4366210223630112740458758316827,
b[6]=896878436896140749138361006566548336071636396490005664374818159563751598674344336941/
5901910841358241153066354693443102222070394003395707585243672949102475401519736720800,
b[7]=7313950190577733068066406250/14824175638294700286557272779,
b[8]=-16063489150654390383296000/54687057461871573111333849,
b[9]=608799317735794481861/7494797304744605111718,
b[10]=0,

b*[1]=1774600368527162619/39781803854163746050,
b*[2]=0,
b*[3]=0,
b*[4]=32682664296052732750000000000000/12237407528692429753538888074653,
b*[5]=1613021830993125656000000000/7306908939590938710641463789,
b*[6]=791180295543850558970031000997303838661625778390906982427125664631928/
3622667153393802697274794410484953168258089439622231002370760754183025,
b*[7]=3939837293445123160156250/17217393308123926000647239,
b*[8]=0,
b*[9]=0,
b*[10]=79854863595916300271/3925846207247174106138.

Version: 8 Oct 2011, Peter Stone