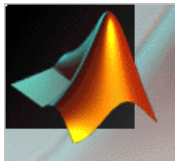
Explizites Runge-Kutta-Verfahren DOPRI5

Beispiel: Arenstorf-Orbit



MATLAB OdeSuite

see `ode45.m, aren.m`

```
tspan = linspace ( 0, te, 1001 );
opt = odeset ( 'RelTol', 1.0e-8, 'AbsTol', 1.0e-8 );
[ t, y ] = ode45 ( @aren, tspan, y0, opt, mu );


function yp = aren ( t, y, mu ),
% -> allocate memory for source term and output
yp = zeros ( size(y) );
% -> read vector of unknowns
y1 = y(1);  y1p = y(2);  y2 = y(3);  y2p = y(4);
% -> evaluate right hand side
d1 = ((y1+mu)^2+y2^2)^1.5;
d2 = ((y1-(1-mu))^2+y2^2)^1.5;
yp(1) = y1p;
yp(2) = y1+2*y2p-(1-mu)*(y1+mu)/d1-mu*(y1-(1-mu))/d2;
yp(3) = y2p;
yp(4) = y2-2*y1p-(1-mu)*y2/d1-mu*y2/d2;
```