
```

function x = ERKTemplate(ButcherArray, f, T, dT, x0)
% Returns the iterations of an ERK method
% ButcherArray: Struct with the ERK's Butcher array
% f: Function handle
%   Vector field of ODE, i.e.,  $\dot{x} = f(t, x)$ 
% T: Vector of time points, 1 x Nt
% x0: Initial state, Nx x 1
% x: ERK iterations, Nx x Nt
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Define variables
% Allocate space for iterations (x) and k1,k2,...,kNstage
% It is recommended to allocate a matrix K for all kj, i.e.
% K = [k1 k2 ... kNstage]

A = ButcherArray.A;
c = ButcherArray.c;
b = ButcherArray.b;

Nstage = size(c,1);
Nt = size(T, 2);
Nx = size(x0, 1);

K = zeros(Nx, Nstage);
x = zeros(Nx, Nt);

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
x(:,1) = x0;
% Loop over time points
for nt=2:Nt
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
    % Update variables
    x_k = x(:,nt-1);
    K(:,1) = f(T(nt), x_k);
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
    % Loop that calculates k1,k2,...,kNstage
    for nstage=2:Nstage
        ksum = 0;
        for i=1:nstage-1
            ksum = ksum + A(nstage,i)*K(:,i);
        end
        K(:,nstage) = f(T(nt), x_k+dT*ksum);
    end
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
    % Calculate and save next iteration value x_t
    xsum = 0;
    for m=1:Nstage
        xsum = xsum + b(m)*K(:,m);
    end
    x(:,nt) = x_k + dT*xsum;
    %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
end

```

end

Not enough input arguments.

Error in ERKTemplate (line 15)

A = ButcherArray.A;

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