```
%=======================================================%
%           FT - Schrödinger-equations                  %
%=======================================================%

% constants
hbar = 0.6582119514;
e    = 1.602176565e5;
me   = 2*5.686e-3;
mh   = me;
eps0 = 1.41844e6;
coulomb = - e^2/(4*pi^2*eps0) ;

% values for interpolation points
I = [100,200];
N = 1000;


% potential & energy functions
V = @(k,k1) (coulomb * k1./k .* log(abs((k+k1)./(k-k1)))).^(1-
eq(k,k1))-eq(k,k1);
E = @(k,k1,m) (hbar*k).^2./(2*m).*eq(k,k1) ;

% comparison of different integrators
results = struct();

for i=1:5
% k values and weigthings g
[k, g]  = integrate(I,N,i);
[K, K1] = meshgrid(k);
weight  = repmat(g,length(k),1);

% Hamiltonian
dim = size(K);
H = reshape(  V(K(:),K1(:)).* weight + E(K(:),K1(:),me) +
 E(K(:),K1(:),mh),  dim);
energy = eig(H);

switch i
    case {1} %Rechteck
        results.H_Rechteck = energy;
    case {2} %Trapez
        results.H_Trapez = energy;
    case {3} %Kepler
        results.H_Kepler = energy;
    case {4} %GTS
        results.H_GTS = energy;
    case {5} %Gauss
        results.H_Gauss = energy;
end
end
result = sort([results.H_Rechteck results.H_Trapez results.H_Kepler
 results.H_GTS results.H_Gauss]);
```

```
result(1,:)
```

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