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%Matlab program
%Einstein relation for gaussian DOS
% For more details contact Yohai Roichman or Yevgeni Preezant

a=0.15% [eV]-Gaussian width

T=150
kT=0.026*T/300

e=[-6:0.01:6]; % [eV]-Energy integration span
for i=1:300
    mu=(1-i)/150; % [eV]-Fermi level Standard

    g=exp(-e.^2./(2.*a.^2)); % Gaussian DOS
    f=1./(1+exp((e-mu)/kT)); % Fermi Dirac
    p(i)=(sum(g.*f)./sum(g)); % The charge density normalised to the sites density
    ER(i)=sum(exp((e-mu)/kT).*g.*f.^2)/(sum(g.*f)); % The Einstein relation for the density 'p'
    Ef(i)=mu;
end
```