%% stock details

stock = 100;

rate = 0.03;

level = 0.30;

speed = 1;

volvol = 0.1;

%%

heston\_model = heston(rate,speed,level,volvol,...

'correlation',0,...

'StartState', [stock;0.25]);

%%

%% simulate!

nobs =720;

delta = 1/360;

nTrials = 7000;

ss = simulate(heston\_model, nobs,...

'DeltaTime', delta,...

'nTrials', nTrials);

%% now price call with heston

call\_mat =2;

call\_strikes = [80:5:120];

paths = squeeze(ss(:,1,:));

call\_payoffs = nan(1,length(call\_strikes));

for i = 1:length(call\_strikes)

for j = 1: nTrials

call\_payoffs(j,i) = max(paths(end,j)- call\_strikes(i),0);

call\_prices = mean(exp(-rate\*call\_mat)\*...

call\_payoffs);

end

end

%% Now imply volatility using BS

imp\_vol = blsimpv(stock,...

call\_strikes,rate, call\_mat,...

call\_prices,'Yield',0,'Limit', 0.5,'Class', {'Call'});

plot(imp\_vol);