

```

function [handles] = CollapseFragility(n,handles)

%Hello

%Fit of Collapse Fragility Function based on Maximum Likelihood
fun2 = @(v) maxLikelihood(handles.numberCollapse, n, handles.stripes, v(1), v(2));
v_guess = [.8, .4];
ML_minimumParameters = fminsearch(fun2, v_guess);

ML_Sa = handles.hazardDerivative(1,:);
ML_P = normcdf((log(ML_Sa)-log(ML_minimumParameters(1)))/ML_minimumParameters(2));
handles.P_collapse = ML_P;

figure
plot(handles.stripes,handles.numberCollapse/n, 'o',ML_Sa,ML_P, 'k')
grid on
title('Collapse Fragility Function')
legend('Stripe Analysis Median Collapse', 'Max Likelihood Fragility Fit')
xlabel('Sa (g)')
ylabel('P[C]')
legend('Location','northwest')
xlim([0,2])
set(gca, ...
    'Box'          , 'off'          , ...
    'TickDir'      , 'out'          , ...
    'TickLength'   , [.02 .02]     , ...
    'XMinorTick'   , 'on'           , ...
    'YMinorTick'   , 'on');

%Calculate PDF of Collapse
pdf_collapse = ML_P.*handles.hazardDerivative(2,:);

figure
plot(handles.hazardDerivative(1,:), pdf_collapse);
title('Collapse Deaggregation')
xlabel('Sa (g)')
ylabel('P[collapse|IM]*d(lambda)/d(IM)')
set(gca, ...
    'Box'          , 'off'          , ...
    'TickDir'      , 'out'          , ...
    'TickLength'   , [.02 .02]     , ...
    'XMinorTick'   , 'on'           , ...
    'YMinorTick'   , 'on');
grid on

%Integrate PDF of Collapse to get Mean Annual Frequency
MAF_c = trapz(handles.hazardDerivative(1,:), pdf_collapse); % Is this corrent?
%Probability of Collapse in 50 years
Prob_50 = 1 - exp(-MAF_c*50);

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handles.MAF_c = MAF_c;  
handles.Prob_50 = Prob_50;
```