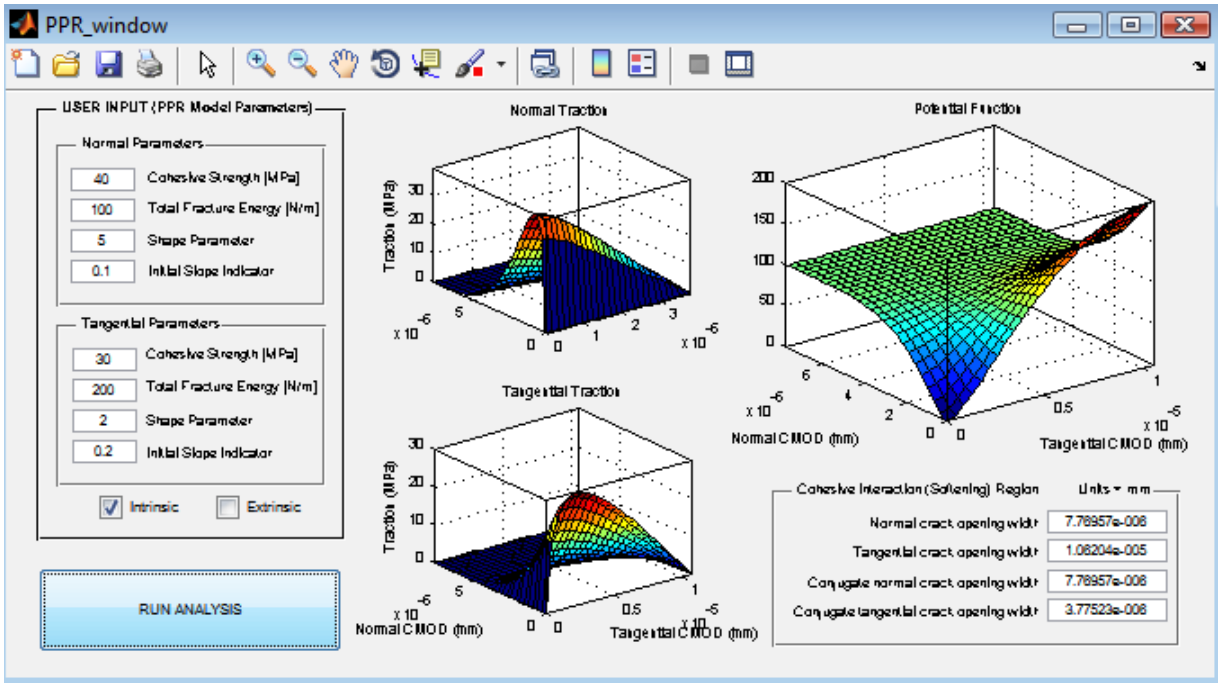
INTRODUCTION TO THE PPR (PARK-PAULINO-ROESLER) MODEL GRAPHICAL USER INTERFACE (GUI)

- This document provides instructions on how to use the graphic user interface (GUI) for PPR cohesive zone model.

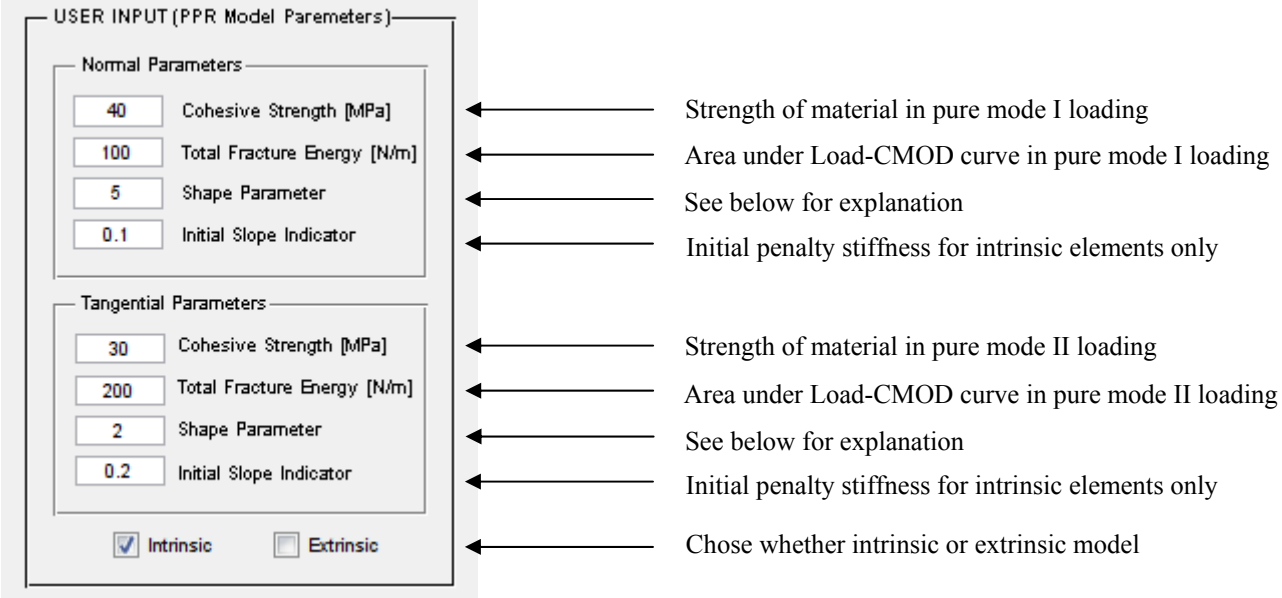
- The purpose of the GUI is to provide the user with a means to visualize the PPR model without worrying about actual implementation details.

- To launch the GUI, download the three companion files into MATLAB.
    - PPR_window.m
    - PPR_window.fig
    - cohesivePPR.m

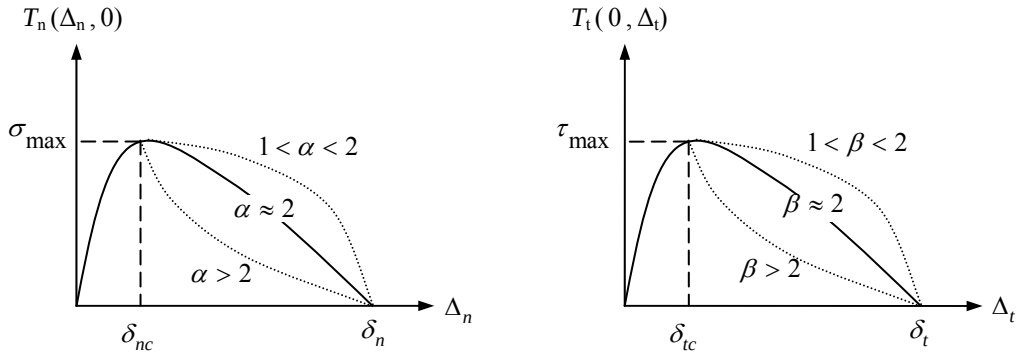
In the command window of MATLAB type "PPR_window" (minus the quotations) and a GUI will appear that looks similar to:



- The user inputs are on the left hand side of the GUI:



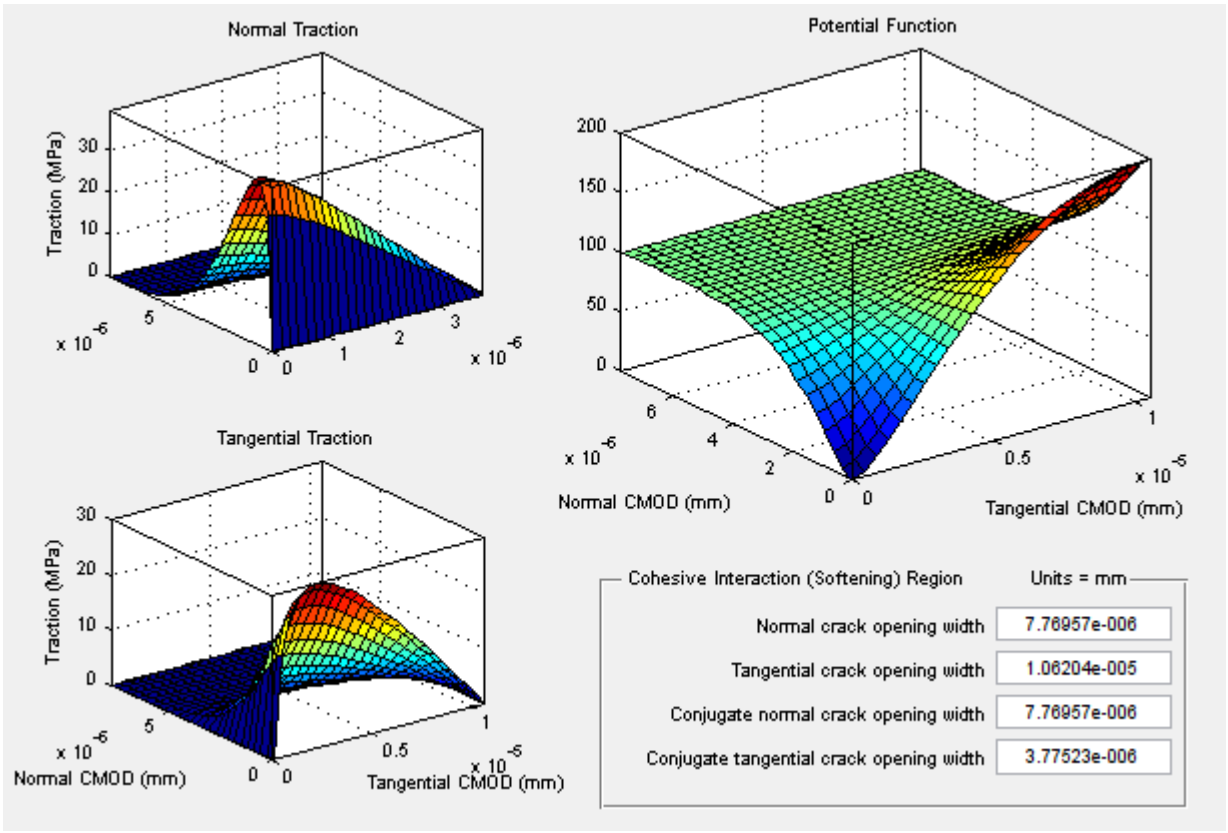
The shape parameters, asked for in the user input panel α and β, are defined as below for the normal direction (T_n) and the tangential direction (T_t), respectively.



- To run the analysis, push the button labelled "RUN ANALYSIS", located in the bottom left corner of the GUI.

- **Sample Results**

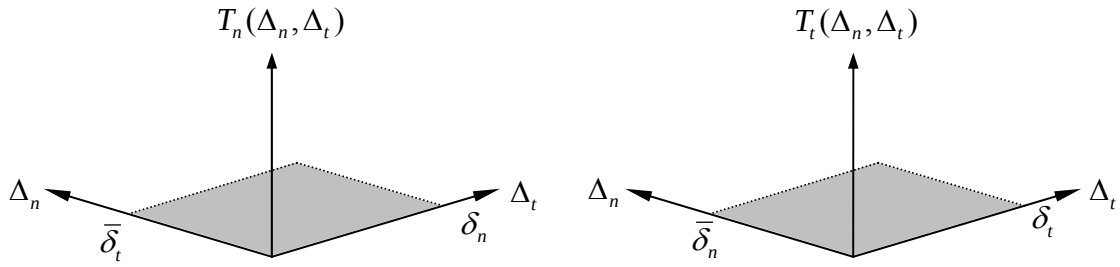
The results of the analysis include plots of the normal traction-separation relationship, the tangential traction-separation relationship, and the potential function, defined in the supporting documentation for both the intrinsic and extrinsic cases.



Also included in the results is a list of the final crack opening widths, defined as follows:

- Normal crack opening width (δ_n),
- Tangential crack opening width (δ_t),
- Conjugate normal crack opening width ($\bar{\delta}_n$), and
- Conjugate tangential crack opening width ($\bar{\delta}_t$)

seen plotted in the figure below.



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All of the mathematical formulations are provided in the supporting documentations and presentations, found on the website where the MATLAB files were downloaded.