

## GENOA PARAMETRIC CARPET PLOTS (PCP)

GENOA Parametric Carpet Plots is an add-on package that allows the user to generate carpet plots of any Multi Scale Progressive Failure Analysis simulation with respect to stress, strain, final load or pressure loading for any layup and fiber architecture. Many percentages of three user chosen angles are generated and run through GENOA PFA to generate these plots. The plots (load or stress) can also be visualized at the following states: damage initiation, damage propagation, fracture initiation, fracture propagation, and final failure.

- ✓ Generates carpet plots of laminate properties as a function of percent 0°, +/-45° and 90° plies or other user defined angles.
- ✓ Determine measured output at damage initiation, damage propagation, fracture initiation, fracture propagation, and final failure.
- ✓ Identifies laminates (regions) that are governed by fiber failure dominance, by matrix cracking (transverse and shear) dominance and by combined fiber/matrix failure.
- ✓ Applicable to coupon and structural component levels.

### Key Benefits

- Effective tool in reducing the risk in structural design.
- Reduces the number of laminate tests needed to verify the range of percentages.
- Relies on GENOA to generate strength for all remaining laminate layups.
- Provides a guideline when test data is not available
- Identifies laminate layups that are governed by specific local criteria
  - Fiber controlled vs. Matrix controlled (transvers or shear) layups identified

### System Requirements

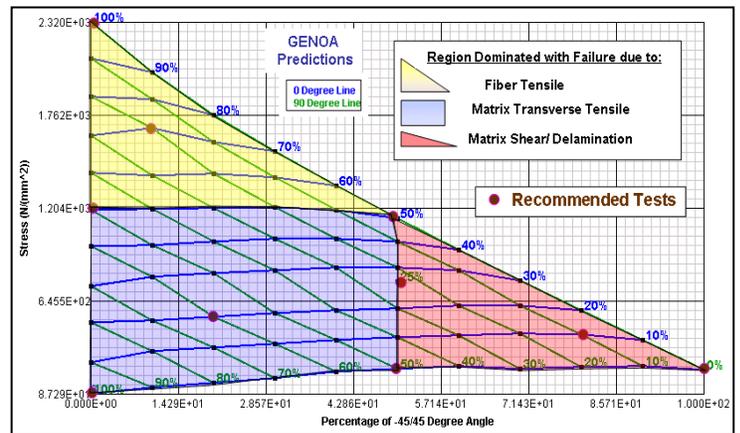
- Windows XP/Vista/7/8 or Linux (64-bit)
- Java 1.7 minimum Runtime Libraries

### Minimum Configuration

With the minimum configuration, performance and Functionality may be less than expected.

- 1 GHz or higher CPU, 4GB RAM, 10GB disk space

Carpet Plots Show Laminate Configurations, Structural Strength and Dominating Failure Mode



- Carpet plots are an effective tool to accelerate qualification and certification of aerospace advanced composite materials.
- Can be used to recommend minimum number of laminate layups to be tested.
- Strength carpet plot shows 3 bounded failure regions.

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GENOA: PFA, PFDA, UAB, URD, ABS, PCP, PA, Quasi Static Fatigue & Random Fatigue, Harmonic & PSD Fatigue, Fatigue with Fracture Mechanics, PFA\_AGING, VCCT, DCZM, Filament Winding, Jobspooler, GENOA\_CLOUD