

- Project proposal -

Microscopic observation and statistical analysis of initiation and propagation of the fiber/matrix interface crack

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1. Introduction

Only few works ([? ?]) have attempted to quantify the size of debonding

2. Objectives

1. Determine the statistical distribution and statistical descriptors (mean,
mode, median, variance) of

- a debond size,
- b angular position of debond's crack tips,
- c angular position of debond's mid-point,
- d angular position of kinks' start,
- e kinking angles,

parameterized with respect to

- a fibers' material,
- b laminate lay-up,
- c level of applied strain.

2. Investigate correlations between the quantities defined in 1 and the distribution of

- a fibers' radii
- b angular position of closest fiber to debonded one
- c distance of closest fiber to debonded one
- 20 d material
- e lay-up
- f level of applied strain

3. Materials

Glass-fiber and carbon-fiber cross-ply $[0_{m \cdot n}^{\circ}, 90_n^{\circ}]$ with $m = 1, 10$. 6 speci-
 25 mens for each lay-up and material combination, for a total of 24.

4. Methods

5. Expected outcomes

6. Audience

1-2 students for Project Course or Master thesis.