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## Modeling different repair configurations of an aluminum plate with a hole (Article)

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## Abstract

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This paper investigates the influence of repair configuration on a rectangular plate with a circular hole and subjected to uniform tensile load. The fundamental idea is to study the stress created by either a composite or piezoelectric (PZT) patch on a hole along the width of a rectangular plate. Finite element ANSYS software was used to evaluate the stress concentration factor (SCF) around the hole when the plate is unrepaired, repaired with a piezoelectric patch, and repaired with single and double composite patches. The results showed that the different repair configurations were effective in improving the state of the stress concentration with the positive electric field in the PZT being the most effective in decreasing stress concentration along the width of the rectangular plate. The results also showed that the SCF reduction increased with the decrease of the hole diameter to the plate width ratio ( $D/W$ ) for the composite patch repair. © BEIESP.

## Author keywords

[Composite Patch](#) [FEM](#) [Piezoelectric Actuator](#) [SCF](#)

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