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## Analysis of piezo layer embedded smart laminated composite

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The idea of distributed actuation and sensing has led to numerous structures called intelligent or smart structures being developed. There are many drawbacks to the existing piezoelectric materials being used in smart structures. The piezoelectric fibers are currently available and can be used to produce composites reinforced with synthetic piezo-fiber to overcome the shortfalls mentioned above. A multi-directional 3D FE model using super-element concept is being developed for modeling both structural composite and piezo-fiber composite in the present study. The FE model is validated for piezo-patch composite structure. The numerical results indicate a good agreement with the standard FE results. Numerical examples also study the active control capability and dynamic characteristics of the laminated plate with AFC layers. It can be concluded that the response is increased in hygrothermal environments due to reduced laminate stiffness, which can be controlled by increasing the feedback gain in velocity.

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