











- (iii) The double finite Fourier sine transform method yielded solutions for the unknown deflection as a rapidly convergent double trigonometric sine series of infinite terms.
- (iv) The deflection was found to be decomposable or expressible as flexural and shear deflection components
- (v) The contribution of the shear deflection to the total deflection reduces as the ratio of  $D_s/D$  increases.
- (vi) This paper will hopefully enhance our understanding of the deflection behaviour of simply supported isotropic sandwich plates under uniformly distributed transverse loads.

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**NOMENCLATURE**

|           |   |
|-----------|---|
| $w(x, y)$ | transverse deflection of arbitrary points $(x, y)$ on the plate domain                                |
| $q(x, y)$ | distribution of transversely applied load over the plate region                                       |
| $x, y$    | in-plane Cartesian coordinates describing points on the plate domain.                                 |
| $\mu$     | Poisson’s ratio of plate material   |
| $E$       | Young’s modulus of elasticity   |
| $h$       | plate thickness   |
| $G_c$     | modulus of shear rigidity of the core material  |
| $D_s$     | shear modulus of the core   |
| $D$       | flexural modulus  |
| $k(r, s)$ | finite sine transformation kernel   |
| $2a, 2b$  | dimensions of the sandwich plate in the $x$ and $y$ coordinate axes respect (i.e. breadth and length) |
| $r, s$    | integers  |
| $\infty$  | infinity  |
| $w(r, s)$ | deflection in the finite sine transform space   |
| $q(r, s)$ | distributed transverse load in the finite sine transform space  |
| $q_0$     | intensity of uniformly distributed load   |
| $\alpha$  | plate aspect ratio  |
| FSDT      | first order shear deformation theory  |

**Subscripts**

|     |          |
|-----|----------|
| max | maximum  |
| $f$ | flexural |
| $s$ | shear    |

**Mathematical symbols**

|  |  |
|--|--|
| $\nabla^2$                                 | Laplacian                                  |
| $\nabla^4 = \nabla^2 \nabla^2$             | biharmonic operator                        |
| $\int$                                     | integration sign or integral               |
| $\iint$                                    | double integration sign or double integral |
| $\Sigma$                                   | summation                                  |
| $\Sigma\Sigma$                             | double summation                           |
| $\frac{\partial}{\partial x}$              | partial derivative with respect to $x$     |
| $\frac{\partial}{\partial y}$              | partial derivative with respect to $y$     |
| $\frac{\partial^2}{\partial x \partial y}$ | mixed partial derivative                   |