

# Comment on “Series solutions for a transversely loaded and completely clamped thick rectangular plate based on the three-dimensional theory of elasticity” by I. A. Okumura and Y. Oguma, *Archive of Applied Mechanics*, 68, 103–121 (1998)

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The authors deal with the analysis of a clamped thick rectangular plate and start their derivation with a Boussinesq representation for 3-dimensional elasticity. Unfortunately, their list of references on the treatment of thick plates is rather short and some developments in the analysis of thick plates which avoid typical plate theory assumptions are not mentioned. In reference [1] a general solution representation for thick plates is derived without any ad hoc assumptions. The solution representation is derived by using the Papkovitch-Neuber solution representation for 3-dimensional elasticity and constructing all possible solution forms satisfying the boundary conditions on the upper and lower plate faces. The functional behavior of displacements and stresses in thickness direction is obtained from this analysis and is given in references [1] and [2]. The case of body forces is treated as well. The 3-dimensional plate solution representation requires only to satisfy the remaining boundary conditions on the lateral plate faces by determining the free coefficients of properly chosen functions of  $x$  and  $y$ . An alternative method for the analysis of plates is the use of a general three-dimensional complex solution representation [3]. The use of this general three-dimensional complex solution representation for the analysis of thick plates is illustrated in [4] for the example of a simply supported rectangular plate. In reference [5] a combination of analytical and numerical techniques is utilized for the analysis of thick plates within the concept of Trefftz-type finite elements. Other useful material on the analysis of thick plates can be found in references [6–9].

## References

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