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## Authors' reply <sup>☆</sup>

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For recent years, we have developed the so-called boundary node method for the eigensolutions of arbitrarily shaped membranes [1], 2-D acoustic cavities [2], concave membranes [3], and plates with clamped or mixed boundary conditions [4,5]. Dr J.T. Chen and his coworkers steadily gave us valuable information related to our aforementioned works [1–5]. We express our gratitude to their practical suggestions and comments.

In the previous paper dealing with clamped plates [4], it was proved using some numerical examples the fact that spurious singular values correspond to the eigenvalues of similarly shaped membranes. However, we could not *analytically* explain the reason of appearance of spurious singular values. In the current comments, Dr J.T. Chen and his coworkers have proved that, when the NDIF method is applied to a clamped plate, it always yields a spurious eigensolution corresponding to the eigensolution of a membrane with the same shape as the plate. Although their work lacks generality in that the object of the proof is limited to *circular* plates, it will be a great help to the readers of the journal who may require systematic and analytical explanation about the spurious eigensolution.

### References

- [1] S.W. Kang, J.M. Lee, Y.J. Kang, Vibration analysis of arbitrarily shaped membranes using non-dimensional dynamic influence function, *Journal of Sound and Vibration* 221 (1999) 117–132.
- [2] S.W. Kang, J.M. Lee, Eigenmode analysis of arbitrarily shaped two-dimensional cavities by the method of point-matching, *Journal of the Acoustical Society of America* 107 (3) (2000) 1153–1160.
- [3] S.W. Kang, J.M. Lee, Application of free vibration analysis of membranes using the non-dimensional dynamic influence function, *Journal of Sound and Vibration* 234 (3) (2000) 455–470.
- [4] S.W. Kang, J.M. Lee, Free vibration analysis of arbitrarily shaped plates with clamped edges using wave-type functions, *Journal of Sound and Vibration* 242 (1) (2001) 9–26.
- [5] S.W. Kang, Free vibration analysis of arbitrarily shaped plates with a mixed boundary condition using non-dimensional dynamic influence functions, *Journal of Sound and Vibration* 256 (3) (2002) 533–549.

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