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Discussion

Reply to 'Discussion of "Simple and explicit solution to the wave dispersion equation" [Coastal Engineering 45 (2002) 71–74]^{,☆}

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The author wishes to thank the discusser for his comments and interest. The discusser indeed did a good job for comparing various explicit formulas and his comments can be considered a complement of the author's paper and guidance for engineers to choose a formula from the several. In terms of accuracy, the discusser's new equation (41) has advantage over the author's solution (21). However, in terms of simplicity, (41) is not easy to use because of its segmental functions where the conditions for the two functions are unknown before calculation. In other words, a try-and-error method must be used when applying (41). Considering this try-and-error procedure, the author prefers Hunt's solution (4) or (33) to (41) if more accuracy is required. The same comments are applied to Nielsen's solution (42). Besides, the author prefers the maximum to the average relative error as the goodness of an approximation. Finally, from a practical view, all solutions except Fenton's are good enough since all their relative errors are less than 1%. Any further refinement of the calculation is meaningless if the errors of hydraulic measurements (water depth and wave period) are greater than 1%.

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