rotational parameters, α, in the range of $0 \leqslant \alpha \leqslant 3$. To avoid the difficulties in satisfying the boundary conditions at large distances from the cylinder a new numerical technique is introduced. Further, series expansion solutions are obtained which are valid at small values of α, but the results are found to be applicable over a wide range of values of α. The calculated values of the drag and lift coefficients and the general nature of the streamline patterns are in good agreement with the most recent time-dependent calculations performed by Badr and Dennis.

AN EXPLICIT FINITE-DIFFERENCE SOLUTION TO THE WAVE EQUATION WITH VARIABLE VELOCITY. Alvin K. Benson, *Brigham Young University, Provo, Utah, USA.*

An explicit method is formulated for solving the scalar wave equation using finite differences in isotropic, inhomogeneous media. Extrapolation from the known grid-plane to the unknown grid-plane is in *depth* so that the final result represents an image of the medium's true spatial structure. This image is often used to predict favorable locations for drilling into the earth. This paper determines equations for the depth differencing coefficients and the lateral differencing coefficients of a polynomial series solution to the wave equation.

PSEUDO-SPECTRAL SOLUTION OF NONLINEAR SCHRODINGER EQUATIONS. D. Pathria, *University of Waterloo, Waterloo, Ontario, CANADA*; J. Ll. Morris, *University of Dundee, Dundee, Scotland, UNITED KINGDOM.*

We compare four pseudo-spectral split-step methods for solving a class of nonlinear Schrödinger (NLS) equations. The importance of observing the L^2 invariance of the continuous problem is demonstrated through numerical experiments. The best performance is obtained by transforming the given equation to an NLS equation where two of the coefficients satisfy a simple algebraic relationship. The problem can be solved efficiently in terms of the new variables, and the l^2 norm of the computed solution is time-invariant.

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