Construction of An Approximate Periodic Solution to a Modified Lewis Equation 'KALE OYEDEJI, Morehouse College, Atlanta, Georgia — There have been many papers published on the construction of approximate periodic solutions of various types of non-linear differential equations. Many techniques have also been developed for obtaining approximate solutions. Among them are the method of Krylov-Bogoliubov-Mitropolsky, the harmonic balance, and the averaging method. We investigate the periodic solution of a modified Lewis equation $\ddot{x}+x^3=?(1-|x|)\dot{x}$, * where ? is a small and positive parameter, because of its strong cubic nonlinearity. Using an extension of the Mickens-Oyedeji method [1] developed by Cveticanin [2], we calculate the exact angular frequency for the equation $\ddot{x}+x^3=0$, ** and using the result of a first-order averaging method to calculate the approximate periodic solution of Eq. (*). Our result is compared with numerical calculations and there is a good agreement between our result and numerical calculations.

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