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Nadhém Echi* (echi_fst@yahoo.fr), El Manar University Faculty of Sciences Tunis, 1000 El Manar Tunis, Tunisia, Tunisia. *Approximate solution of second-order linear differential equation*. Preliminary report.

This paper presents an efficient approach for determining the solution of second-order linear differential equation. The second-order linear ordinary differential equation is first converted to a Volterra integral equation. By solving the resulting Volterra equation by means of Taylor's expansion, different approaches based on differentiation and integration methods are employed to reduce the resulting integral equation to a system of linear equation for the unknown and its derivatives the approximate solution of second-order linear differential equation is obtained. Test example demonstrates the effectiveness of the method and gives the efficiency and high accuracy of the proposed method. (Received November 17, 2012)