Cube polygon: a new modified Euler method to improve electric circuit efficiency

ABSTRACT

Euler method is a numerical order process for solving problems with the Ordinary Differential Equation (ODE). It is a fast and easy way. While Euler offers a simple procedure for solving ODEs, problems such as complexity, processing time and accuracy have driven others to use more sophisticated methods. Improvements to the Euler method have attracted much attention resulting in numerous modified Euler methods. This paper proposes Cube Polygon, a modified Euler method with improved accuracy and complexity. In order to demonstrate the accuracy and easy implementation of the proposed method, several examples are presented. Cube Polygon's performance was compared to Polygon's scheme and evaluated against exact solutions using SCILAB. Results indicate that not only Cube Polygon has produced solutions that are close to identical solutions for small step sizes, but also for higher step sizes, thus generating more accurate results and decrease complexity. Also known in this paper is the general of the RL circuit due to the ODE problem.