

Abstract

This one-dimensional simulation is performed to find the convergence of different fluxes on the water wave using shallow water equation. There are two cases where the topography is flat and not flat. The water level and grid of each simulation are made differently for each case, so that the water waves that occur can be analyzed. Many methods can be used to approximate the shallow water equation, one of the most used is the finite volume method. The finite volume method offers several numerical solutions for approximate shallow water equation, including Rusanov and HLLE. The derivation result of the numerical solution is used to approximate the shallow water equation. Differences in numerical and topographic solutions produce different waves. On flat topography, the Rusanov flux has an average convergence 0.86898 and HLLE flux with an average convergence 1.13810. While the topography is not flat, the Rusanov flux has an average convergence 0.76426 and the HLLE flux has an average convergence 0.87175.

Keywords: shallow water equation, finite volume method, convergence, topography, rusanov, HLLE.