Well-Balanced Positivity Preserving Central-Upwind Scheme on Triangular Grids for the Saint-Venant System

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Abstract: We introduce a new second-order central-upwind scheme for the Saint-Venant system of shallow water equations on triangular grids. We prove that the scheme both preserves stationary steady states (lake at rest) and guarantees the positivity of the computed fluid depth. Moreover, it can be applied to models with discontinuous bottom topography and irregular channel widths. We demonstrate these features of the new scheme, as well as its high resolution and robustness in a number of numerical examples.