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Some analytical tests of nonlinear theory of landslide motion on inclined plane

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Various models are used to describe the avalanche and landslide motion: solid block model, shallow-water friction model, nonlinear-dispersive Boussinesq system, Reynolds-averaged Navier-Stokes equations. The solid block approximation allows to obtain the analytical solutions and easily realized numerically (Harbitz, 1993; Pelinovsky & Poplavsly, 1997; Watts, 2000). The shallow-water approximation is actively used to model the avalanche, volcanic flow, aerial and submarine landslides. Analytical solutions in the framework of simplified version of the shallow-water model are obtained by Mangeney et al (2000) and Rudenko et al (2007). Given paper extends this analysis and presents new solutions for the 2D landslide motion on the inclined plate.