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A mathematical study of a torrential flow over an obstacle

We study theoretically and numerically a steady, bidimensional and torrential flow of an incompressible and ideal fluid lying on the bottom of a channel. We take into account of the gravity and we neglect the effects of the superficial tension. The method used to solve our non-linear problem is based on the minimization of the functional of the total energy of the system. Different figures are given to illustrate the obtained results.