Stability analysis of a difference scheme for the dynamic model of gas lift process(Conference Paper)

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The paper studies a model of the gaslift process where the motion in a gas-lift well is described by partial differential equations. The system describing the studied process consists of equations of motion, continuity, equations of thermodynamic state, and concentration equation. A finite-difference scheme is constructed for the numerical solution of the problem. Because of the complexity of the motion equation, two simplified difference analogues for this equation are considered. The stability of these equations are investigated using the method of a priori estimates. The estimates obtained will be used for proving the stability of the whole difference scheme in future works. © Springer Nature Switzerland AG 2019.