

On Problems of Optimal Nodal Control for Gas Networks

We consider optimal control problems for gas pipeline systems. The flow is governed by a quasilinear hyperbolic model. Since in the operation of the gas networks regular solutions without shocks are desirable, we impose appropriate state and control constraint in order to guarantee that a classical solution is generated. Due to a $W^{2,\infty}$ -regularization term in the objective function, we can show the existence of an optimal control. Moreover, we give conditions that guarantee that the control becomes constant at the end of the control time interval if the weight of the regularization term is sufficiently large.