Checking Feasibility in Stationary Models of Gas Transportation

Claudia Stangl, Ralf Gollmer, Rüdiger Schultz

Checking the feasibility of transportation requests belongs to the key tasks in gas pipeline operation. In its most basic form, the problem is to decide whether a certain quantity of gas can be sent through the network from prescribed entries to prescribed exit points. In the stationary case, the physics of gas flow together with technological and commercial side conditions lead to a pretty big (nonlinear, mixed-integer, finite dimensional) inequality system. We present elimination and approximation techniques so that the remaining system gets within the reach of standard NLP-solvers.