An example of university-industry collaboration for gas transport modeling.

Nora AÏSSIOUENE, Summit, Sorbonne Université - Paris
Marguerite D'OLCE, Gaztransport & Technigaz SA - Saint-Rémy-lès-Chevreuse

Pierre-Yves LAGRÉE, Institut Jean le Rond D'Alembert, Sorbonne Université, CNRS - Paris
Yohan PENEL, Inria, team ANGE - Paris

Optimization of transportation conditions of gases through pipeline networks is a common problem with several industrial issues, such as pressure losses. We are interested in the modeling of the flow through a pipe.

We consider an averaged version across the section of a pipe of compressible Navier-Stokes equations for ideal gases, and we propose a derivation of an asymptotic model based on a low Mach number assumption since the velocity inside the transportation pipes is small enough.

We apply a finite difference scheme together with the method of characteristics for the simulation of the aforementioned problem and we propose to confront our numerical method on a specific test case composed of a pipe, on which we apply a variable parietal temperature.

Contact : nora.aissiouene@sorbonne-universite.fr