Modeling of the gas flow in porous reacting media

The goal of the project is to create the model which will simulate the process of the gas flow through the media with variable porosity and to solve the model numerically. The isothermal process is considered.

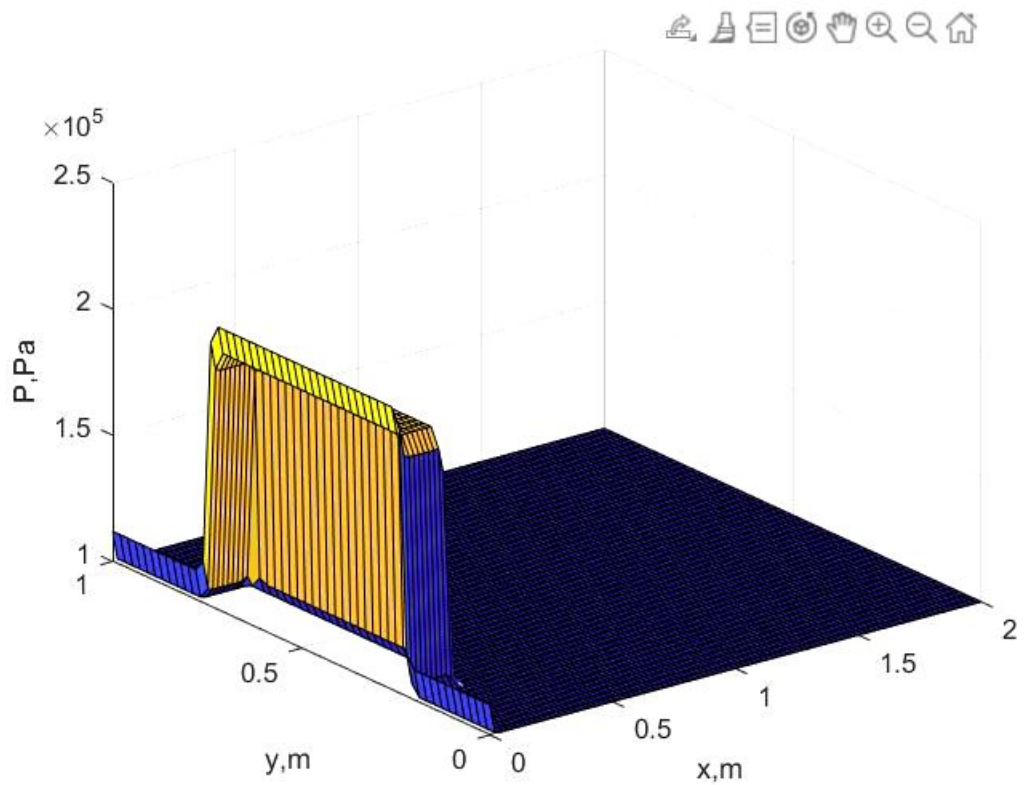
- $$-\phi\frac{\partial\rho}{\partial t} = \nabla(\rho v) \qquad (1)$$

$$v = -\frac{k_g}{\mu}(\nabla P - \rho g) \qquad (2)$$

$$k_g(P) = k_\infty(1 + \frac{b}{P}) \qquad (3)$$

$$\rho = MP/RT \qquad (4)$$

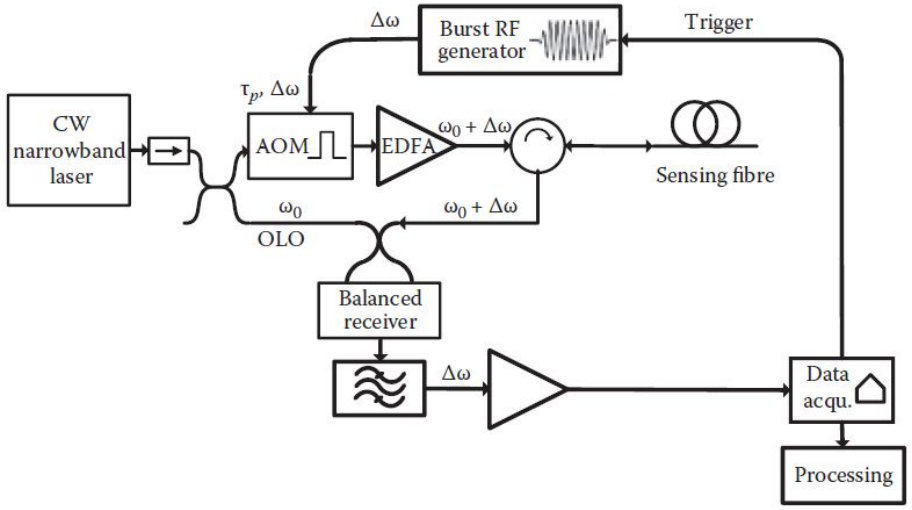
$$\frac{\mu\phi}{k_\infty}\frac{\partial P}{\partial t} = \nabla\big((P + b)(\nabla P)\big)$$



Development of methods and algorithms for analysis of distributed acoustic measurements

The goal of the work is to create the analytical model of phase-based DAS in case of homodyne Distributed Vibration Sensor. The fiber is considered as a set of scatterers with given positions and amplitude.

- Heterodyne DVS



- Homodyne DVS