# Equilibrium Dispersive Model with Linear isotherm

|  |  |
| --- | --- |
|  | concentration |
|  | time |
|  | axial coordinate |
|  | column length |
|  | time of experiment |
|  | flow speed |
|  | axial dispersion coefficient |
|  | solid phase porosity |
|  | linear isotherm constant |

Equilibrium dispersive model with linear isotherm:

Feed injection piecewise function:

Left boundary:

Right boundary:

Initial Conditions:

Mesh definition:

in dimension *x* is divided into *n* same parts: ,

in dimension *t* is divided into *r* same parts: ,

The set of nodes that will arise in intersecting lines *x = ih* and *t = jk* is rectangular mesh . Notation:

# Implicit Crank-Nicolson scheme

Average of Centered Differencing formulas in space:

Average of Second-order centered differencing formulas in space:

Forward differencing in time:

Full approximation:

Left boundary:

Right boundary:

## Solution

General expression:

Left boundary:

Right boundary:

Leading to system of algebraic equations:

Where are known and is solution vector of next time step.