# Equilibrium Dispersive Model with Nonlinear isotherm

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

Equilibrium dispersive model with nonlinear 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:

# Explicit Central difference scheme

Centered Differencing formulas in space:

Second-order centered differencing formulas in space:

Forward differencing in time:

Full approximation:

Left boundary:

Right boundary:

## Solution

General expression:

Left boundary:

Right boundary:

## Convergence proof