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Analyitcal model for two-dimensional solute transport in a double-domain geological medium

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A semi-analytical model for solute transport in a two-domain medium is developed in this study. The governing transport equation is solved analytically by employing the Laplace transform and the finite Fourier cosine transform technique. The developed analytical solution shows an excellent agreement with the numerical model obtained uisng Laplace transform finite difference solution. Furthermore, the salient behavior of solute transport in double-domain is investigated. A common permeable reactive barrier system is considered as an illustrative example to demonstrate the capability of the developed analytical model for practical application. The developed model is also an efficient tool for verifying the more comprehensive numerical model.