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Numerical solution of 2d seepage flow problem using discrete singular convolution method.
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MSC:

76M25 Other numerical methods (fluid mechanics) (MSC2010)

76S05 Flows in porous media; filtration; seepage

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References:

- [1] Aalto, J. (1984), "Finite element seepage flow nets", *International Journal for Numerical and Analytical Methods in Geomechanics*, Vol. 8 No. 3, pp. 297-303. , · [Zbl 1356.76221](#) · [doi:10.1108/09615531211231262](#)
- [2] Alyavuz, B. (2009), "Solution of two-dimensional heat problem in MATLAB environment using discrete singular convolution method (in Turkish)", *International Journal of Engineering Research and Development*, Vol. 1 No. 1, pp. 57-63.
- [3] Alyavuz, B., Koçyigit, Ö. and Gültop, T. (2009), "Numerical solution of seepage problem using quad-tree based triangular finite elements", *International Journal of Engineering and Applied Sciences (IJEAS\)*, Vol. 1 No. 1, pp. 43-56. · [Zbl 1356.76221](#) · [doi:10.1108/09615531211231262](#)
- [4] Cedergren, H.R. (1967), *Seepage, Drainage and Flow Nets*, Wiley, New York, NY.
- [5] Christian, J.T. (1987), "Numerical methods and computing in ground engineering", in Bell, F.G. (Ed.), *Ground Engineer's Reference Book*, Chapter 57, Butterworths, London, pp. 13-17.
- [6] Civalek, O. (2007a), "Free vibration and buckling analyses of composite plates with straight-sided quadrilateral domain based on DSC approach", *Finite Elements in Analysis and Design*, Vol. 43 No. 13, pp. 1013-22. , · [Zbl 1356.76221](#) · [doi:10.1108/09615531211231262](#)
- [7] Civalek, O. (2007b), "Numerical analysis of free vibrations of laminated composite conical and cylindrical shells: discrete singular convolution (DSC) approach", *Journal of Computational and Applied Mathematics*, Vol. 205 No. 1, pp. 251-71. , · [Zbl 1115.74058](#) · [doi:10.1108/09615531211231262](#)
- [8] Civalek, O. (2007c), "Three-dimensional vibration, buckling and bending analyses of thick rectangular plates based on discrete singular convolution method", *International Journal of Mechanical Sciences*, Vol. 49 No. 6, pp. 752-65. , · [Zbl 1356.76221](#) · [doi:10.1108/09615531211231262](#)
- [9] Civalek, O. (2008), "Free vibration analysis of symmetrically laminated composite plates with first-order shear deformation theory (FSDT) by discrete singular convolution method", *Finite Elements in Analysis and Design*, Vol. 44 Nos 12/13, pp. 725-31. , · [Zbl 1356.76221](#) · [doi:10.1108/09615531211231262](#)
- [10] Civalek, O. (2009), "A four-node discrete singular convolution for geometric transformation and its application to numerical solution of vibration problem of arbitrary straight-sided quadrilateral plates", *Applied Mathematical Modelling*, Vol. 33 No. 1, pp. 300-14. , · [Zbl 1167.74484](#) · [doi:10.1108/09615531211231262](#)
- [11] Harr, M.E. (1962), *Groundwater and Seepage*, McGraw-Hill, New York, NY.
- [12] Lewis, R.W. and Schrefler, B.A. (1998), *The Finite Element Method in the Static and Dynamic Deformation and Consolidation of Porous Media*, Wiley, Chichester. · [Zbl 0935.74004](#)
- [13] Lewis, R.W., Nithiarasu, P. and Seetharamu, K.N. (2004), *Fundamentals of the Finite Element Method for Heat and Fluid Flow*, Wiley, Chichester.
- [14] Namin, M.M. and Motamedi, K. (2009), "A non-hydrostatic free surface 2D vertical model using discrete singular convolution (DSC) method", *Iranian Journal of Science and Technology Transaction B: Engineering*, Vol. 33 No. 1, pp. 95-108.
- [15] Navti, S.E., Lewis, R.W. and Taylor, C. (1998), "Numerical simulation of viscous free surface flow", *International Journal of Numerical Methods for Heat & Fluid Flow*, Vol. 8 No. 4, pp. 445-64. , · [Zbl 0943.76051](#) · [doi:10.1108/09615531211231262](#)
- [16] Reddy, J.N. (1993), *An Introduction to the Finite Element Method*, McGraw-Hill, New York, NY.
- [17] Sarler, B., Perko, J. and Chen, C.-S. (2004), "Radial basis function collocation method solution of natural convection in porous media", *International Journal of Numerical Methods for Heat and Fluid Flow*, Vol. 14 No. 2, pp. 187-212. , · [Zbl 1103.76361](#) · [doi:10.1108/09615531211231262](#)

- [18] Seegin, A. and Sarigul, A.S. (2008), "Free vibration analysis of symmetrically laminated thin composite plates by using discrete singular convolution (DSC) approach: algorithm and verification", *Journal of Sound and Vibration*, Vol. 315 Nos 1/2, pp. 197-211. , · [Zbl 1356.76221](#) · [doi:10.1108/09615531211231262](#)
- [19] Seegin, A. and Sarigul, A.S. (2009), "A novel scheme for the discrete prediction of high-frequency vibration response: discrete singular convolution - mode superposition approach", *Journal of Sound and Vibration*, Vol. 320 Nos 4/5, pp. 1004-22. , · [Zbl 1356.76221](#) · [doi:10.1108/09615531211231262](#)
- [20] Wan, D.C., Patnaik, B.S.V. and Wei, G.W. (2002), "Discrete singular convolution-finite subdomain method for the solution of incompressible viscous flows", *Journal of Computational Physics*, Vol. 180 No. 1, pp. 229-55. , · [Zbl 1130.76403](#) · [doi:10.1108/09615531211231262](#)
- [21] Wang, H.F. and Anderson, M.P. (1995), *Introduction to Groundwater Modeling: Finite Difference and Finite Element Methods*, Academic Press, New York, NY.
- [22] Wei, G.W. (1999), "Discrete singular convolution for the solution of the Fokker-Planck equation", *Journal of Chemical Physics*, Vol. 110 No. 18, pp. 8930-42. , · [Zbl 1356.76221](#) · [doi:10.1108/09615531211231262](#)
- [23] Wei, G.W. (2000), "A unified approach for the solution of the Fokker-Planck equation", *Journal of Physics A: Mathematical and General*, Vol. 33 No. 27, pp. 4935-53. · [Zbl 0988.82047](#) · [doi:10.1108/09615531211231262](#)
- [24] Wei, G.W. (2001a), "A new algorithm for solving some mechanical problems", *Computer Methods in Applied Mechanics and Engineering*, Vol. 190 Nos 15-17, pp. 2017-30. , · [Zbl 1013.74081](#) · [doi:10.1108/09615531211231262](#)
- [25] Wei, G.W. (2001b), "Discrete singular convolution for beam analysis", *Engineering Structures*, Vol. 23 No. 9, pp. 1045-53. , · [Zbl 1356.76221](#) · [doi:10.1108/09615531211231262](#)
- [26] Wei, G.W. (2001c), "Vibration analysis by discrete singular convolution", *Journal of Sound and Vibration*, Vol. 244 No. 3, pp. 535-53. , · [Zbl 1237.74095](#) · [doi:10.1108/09615531211231262](#)
- [27] Wei, G.W., Zhao, Y.B. and Xiang, Y. (2001), "The determination of natural frequencies of rectangular plates with mixed boundary conditions by discrete singular convolution", *International Journal of Mechanical Sciences*, Vol. 43 No. 8, pp. 1731-46. , · [Zbl 1018.74017](#) · [doi:10.1108/09615531211231262](#)
- [28] Wei, G.W., Zhao, Y.B. and Xiang, Y. (2002), "Discrete singular convolution and its application to the analysis of plates with internal supports. Part 1: theory and algorithm", *International Journal for Numerical Methods in Engineering*, Vol. 55 No. 8, pp. 913-46. , · [Zbl 1058.74643](#) · [doi:10.1108/09615531211231262](#)
- [29] Zhao, Y.B., Wei, G.W. and Xiang, Y. (2002a), "Discrete singular convolution for the prediction of high frequency vibration of plates", *International Journal of Solids and Structures*, Vol. 39 No. 1, pp. 65-88. , · [Zbl 1090.74604](#) · [doi:10.1108/09615531211231262](#)
- [30] Zhao, Y.B., Wei, G.W. and Xiang, Y. (2002b), "Plate vibration under irregular internal supports", *International Journal of Solids and Structures*, Vol. 39 No. 5, pp. 1361-83. , · [Zbl 1090.74603](#) · [doi:10.1108/09615531211231262](#)

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