

## Analysis of Kinetic Energy in the Porous Media

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## Abstract

The macroscopic transport analysis for the incompressible fluid flow within the porous media supported the volume-average technique for the heat transfer was given within the numerous researches. Within the present paper there is the analysis and derivations of equations supported the construct of time-average. This offers a latest new ideas and technique for the analysis of flow in porous media. The time-averaged transport equations play a vital role on analyzing the transportation over the extremely semi permeable media wherever the flow happens within the fluid flow.

Keywords: Porous media, Turbulent flow, Transport equation.

## References

- de Lemos, M.J.S. and Silva, R.A., 2003, Turbulent Flow Around a Wavy Interface Between a Porous Medium and a Clear Domain, Proc. of ASME-FEDSM 2003,4th ASME/JSME Joint Fluids Engineering Conference (on CD-ROM), Paper FEDSM2003–45457, Honolulu, Hawaii, USA, July 6–11.
- [2]. de Lemos, M.J.S. and Tofaneli, L.A., 2004, Modeling of Double-Diffusive Turbulent Natural Convection in Porous Media, International Journal of Heat Mass Transfer, Vol. 47, no. 19–20, pp. 4233–4241.
- [3]. Gray, W.G. and Lee, P.C.Y., 1977, On the theorems for local volume averaging of multiphase system, *Int. J. Multiphase Flow*, 3, 333–340.
- [4]. Hsu, C.T. and Cheng, P., 1990, Thermal dispersion in a porous medium, Int. J. Heat Mass Transfer, 33, 1587–1597.
- [5]. Kuwahara, F., Kameyama, Y., Yamashita, S., and Nakayama, A., 1998, Numerical modeling of turbulent flow in porous media using a spatially periodic array, *J. Porous Media*, 1, 47–55.
- [6]. Lee, K. and Howell, J.R., 1987, Forced convective and radiative transfer within a highly porous layer exposed to a turbulent external flow field, *Proc. 1987 ASME-JSME Thermal Eng. Joint Conf.*, 2, 377–386.
- [7]. Miyan, M. (2015); Transport equations for turbulent kinetic energy in porous media, *International Journal of Applied Research*; 1(5): 153-156.
- [8]. Pedras, M.H.J. and de Lemos, M.J.S., 1999a, On Volume and Time Averaging of Transport Equations for Turbulent Flow in Porous Media, *Proc. 3rd ASME/JSME Joint Fluids Eng. Conf.* (on CDROM), ASME-FED-248, Paper FEDSM99-7273, ISBN 0-7918-1961-2, San Francisco, CA, July18–23.
- [9]. Rocamora Jr., F.D. and de Lemos, M.J.S., 2000a, Analysis of convective heat transfer for turbulent flow in saturated porous media, *Int. Commun. Heat Mass Transfer*, 27(6), 825–834.
- [10]. Slattery, J.C., 1967, Flow of viscoelastic fluids through porous media, A.I.Ch.E.J., 13, 1066–1071.
- [11]. Vafai, K. and Tien, C.L., 1981, Boundary and inertia effects on flow and heat transfer in porous media, *Int. J. Heat Mass Transfer*, 24, 195–203.
- [12]. Whitaker, S., 1969, Advances in theory of fluid motion in porous media, Ind. Eng. Chem., 61, 14-28.
- [13]. Whitaker, S., 1999, The Method of Volume Averaging, Kluwer Academic Publishers, Dordrecht.