Comparison between two common collocation approaches based on radial basis functions for the case of heat transfer equations arising in porous medium. (English) Zbl 1221.76156

Summary: Two common collocation approaches based on radial basis functions have been considered; one be computed through the integration process (IRBF) and one be computed through the differentiation process (DRBF). We investigated the two approaches on natural convection heat transfer equations embedded in porous medium which are of great importance in the design of canisters for nuclear wastes disposal. Numerical results show that the IRBF be performed much better than the common DRBF, and show good accuracy and high rate of convergence of IRBF process.

MSC:
76M25 Other numerical methods (fluid mechanics) (MSC2010)
76S05 Flows in porous media; filtration; seepage

Keywords:
collocation method; nonlinear Ode; radial basis functions; direct inverse multiquadric; indirect multiquadric; porous media

Software:
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References:
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