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Homotopy perturbation method for solving fuzzy fractional heat-conduction equation.
(English) [Zbl 1480.35403](#)

Allahviranloo, Tofiqh (ed.) et al., Advances in fuzzy integral and differential equations. Cham: Springer. Stud. Fuzziness Soft Comput. 412, 159-169 (2022).

Summary: General heat-conduction equation and its fractional generalization are used in various applications in science and engineering. The objective of the study of fuzzy fractional heat equation is to use of Double parametric form (DPF) which deal with the uncertainty of the fractional heat equation easily and then applying Homotopy Perturbation Method (HPM) to find out the approximate solution in the form of a convergent series. The terms can be easily computed – increasing the number of terms in the approximate solution series that may be close enough to the exact solution. The results obtained here show that the introduced HPM technique is efficient and easy to implement in fuzzy fractional heat equation.

For the entire collection see [\[Zbl 1476.34001\]](#).

MSC:

- [35R13](#) Fuzzy partial differential equations
- [35R11](#) Fractional partial differential equations
- [35K05](#) Heat equation
- [35K15](#) Initial value problems for second-order parabolic equations

Keywords:

fuzzy number; fuzzy fractional heat equation; double parametric form; homotopy perturbation method

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