

Fractional variational iteration method and its application to fractional partial differential equation

ABSTRACT

We use the fractional variational iteration method (FVIM) with modified Riemann-Liouville derivative to solve some equations in fluid mechanics and in financial models. The fractional derivatives are described in Riemann-Liouville sense. To show the efficiency of the considered method, some examples that include the fractional Klein-Gordon equation, fractional Burgers equation, and fractional Black-Scholes equation are investigated.

Keyword: Black Scholes equations; Fractional derivatives; Fractional partial differential equations; Klein-Gordon equation; Variational iteration method.