

Maximum principle for the fractional diffusion-wave equations and its applications

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Maximum principles are a well-known and widely applied tool in the theory of partial differential equations of elliptic and parabolic type. The fractional diffusion-wave equations with the time-fractional derivative of order α between zero and one interpolate between the PDEs of elliptic and parabolic type and it is natural to expect that the maximum principle is valid for these equations, too.

In the talk, some recent results regarding the weak maximum principle for the general time-fractional diffusion equations, the strong maximum principle for the weak solutions of the single-term time-fractional diffusion equation in the fractional Sobolev spaces, as well as the weak maximum principle for an abstract space- and time-fractional evolution equation in the Hilbert space are discussed.