From the Guest Editor

The heat flow is important to describe the complex freezing and heat transfer behaviors in the biological and mining-rock materials. There are the mathematical models for the heat condition in the different operators (for more details, see [1]), such as Newton-Leibniz calculus, fractional calculus, local fractional calculus (also called the fractal calculus), and general fractional calculus. The heat-condition equation via the Newton-Leibniz calculus was presented in [2, 3]. The fractional-time and/or fractional-space heat-condition equation was discussed in [4, 5]. The local fractional heat-condition equation was given in [6, 7]. The general time-fractional heat-condition equations were suggested in [8, 9]. Due to the complex behaviors of the materials, it is still an open problem for the heat conduction.

The fluid-flow is considered to present the process of the fluid dynamics of the liquid and gas in motion. A great many of the PDE in fluid mechanics, such as generalized Kuramoto-Sivashinsky [10], Korteweg-De Vries [11-13], advection-reaction-diffusion [14], Klein-Gordon [15, 16], and Navier-Stokes [17, 18] equations, were discussed based on the differential operators. Moreover, there are some mathematical coupling models for the solid liquid and gas involving the heat and fluid-flow. In view of the investigation, there is an open problem for the linear and non-linear heat and fluid-flow.

In the special issue, we mainly considered the advanced computational methods for the linear and non-linear heat and fluid-flow and the topics on the heat-conduction and related problems in the mining-rock materials. We received the 160 manuscripts, and we selected 51 papers for publication as a regular volume. I would like to express thanks for Prof. Dr. Simeon Oka and Dr. Vukman Bakić to support and help to publish the special issue.

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