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Radiative nanofluid flow and heat transfer between parallel disks with penetrable and stretchable walls considering Cattaneo–Christov heat flux model
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Abstract
In this work, we explore the unsteady squeezing flow and heat transfer of nanofluid between two parallel disks in which one of the disks is penetrable and the other is stretchable/shrinkable, in the presence of thermal radiation and heat source impacts, and considering the Cattaneo–Christov heat flux model instead of the more conventional Fourier's law of heat conduction. A similarity transformation is utilized to transmute the governing momentum and energy equations into nonlinear ordinary differential equations with the proper boundary conditions. The achieved nonlinear ordinary differential equations are solved by the Duan–Rach Approach (DRA). This method modifies the standard Adomian Decomposition Method by evaluating the inverse operators at the boundary conditions directly. The impacts of diverse active parameters, such as the suction/injection parameter, the solid volume fraction, the heat source parameter, the thermal relaxation parameter, and the radiation parameter on flow and heat transfer traits are examined. In addition, the value of the Nusselt number is calculated and portrayed through figures. © 2018 Wiley Periodicals, Inc.

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