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Abstract
The paper is concerned with the effects of baffled obstacles on steady turbulent Al2O3-H2O nanofluid flow and heat transfer characteristics through channels in different outlet models. The first channel has an outlet as its entrance (case A). The second (case B), third (case C), and fourth (case D) channels have narrow, upper, lower, and central exits, with 45 per cent of their entrance, respectively. These effects are investigated with the help of CFD in a 2D model. The numerical data show improvements in the heat transfer rate of about 45.071, 58.404, 82.413, and 92.433 per cent for cases A, B, C, and D compared to the smooth channel using the same solid volume fraction of Al2O3 nanoparticle, respectively. Among the most effective channels on heat transfer is case D, about 37.658, 21.356, and 9.348 per cent compared to cases A, B, and C, respectively for the maximum value of Reynolds number. © 2019, Mathematical Modelling of Engineering Problems.

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