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Non-sinusoidal waveform effects on heat transfer performance in pulsating pipe flow
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Abstract
In the present paper, an unsteady motion of fluid flow in a pulsating pipe is studied to determine the effect of non-sinusoidal waveforms on the heat transfer performance. Three non-sinusoidal waveforms, namely sawtooth, square and triangular waveforms have been considered. Explicit analytical expressions for a periodic laminar flow describing the flow and heat transfer at small and large times with sawtooth and square pressure waveforms have been derived using Bessel transform technique. The heat transfer performance of periodic flow at sawtooth and square pressure waveforms has been compared with the published result for triangular waveform [1]. The temperature performance for a triangular waveform pressure is very different from the sawtooth and square pressure waveforms. © 2016 Faculty of Engineering, Alexandria University

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