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Influence of power-law exponent on an unsteady endothermic reaction

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Abstract

In [6], the solution of a steady Arrhenious endothermic chemical reaction where the exponential term was reduced to a power-law approximation was studied. A numerical solution obtained using a

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shooting technique with second order Runge-Kutta scheme showed that the minimum temperature of the reactant increases as the power-law index increases. In this paper, the scope of the work was extended to a solution of an unsteady Arrhenious endothermic reaction using shooting technique [3]. The result showed that the temperature of the reactant depends greatly on the power-law exponent. The temperature of the reactant increases as the power-law exponent α increase, whereas the temperature decreases as the Frank- Kamenestkii parameter β increases.

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