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Stability Analysis of Stagnation-Point Flow and Heat Transfer over an Exponentially Shrinking Sheet with Heat Generation

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ABSTRACT

This case study seeks to examine the fluid flow at stagnation-point over an exponentially permeable shrinking sheet towards suction. This work also investigate the heat transfer in the present of heat generation. By using an appropriate similarity transformation, we obtain ordinary differential equations by reduction of governing partial differential equation. We used commercially Maple software to obtain the numerical result. The effects of the parameters involve in this study are summarizes and thoroughly discussed. Remarkably, the dual solution is found at certain range of the shrinking sheet and suction parameters. Thus, this result is further performed to analyze its stability by using Matlab software. As expected, our study has proved that the first solution is stable while the second one is not.