

# **AN UNSTEADY BOUNDARY LAYER FLOW OF AN INCOMPRESSIBLE MICROPOLAR FLUID NEAR STAGNATION POINT WITH ELECTROMAGNETIC FIELDS**

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## **ABSTRACT**

An unsteady boundary layer flow of an incompressible micropolar fluid near the forward stagnation point under electromagnetic field has been studied. The velocity of the flow is assumed to have started impulsively from rest and is maintained thereafter. Using non-similarity transformations, the governing boundary layer flow equations are reduced to boundary value problem (BVP). This system involves time and space variables. The missing initial conditions are obtained using Newton's method to satisfy the end conditions of the boundary. The results are compared with available results to confirm the validity of the numerical code developed and the approach used. Velocity profiles, micro-rotation profiles and skin-friction coefficient for various values of parameters involved are presented. Smooth transition from unsteady to steady flow for large time solutions is observed. The effect of electromagnetic parameter on the flow field is also presented and is observed that with the increase of this parameter, flow reduces near the wall.

**KEYWORDS:** Unsteady Boundary Layer Flow, Micropolar Fluid, Electro Magnetic Fields