



"Bifurcation solutions for boundary layer flow in power law fluids with reverse flow"

Friday September 14, 2:30 pm
Pickard Hall, Room 304

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Abstract: This talk considers a class of singular nonlinear two-point boundary value problems

$$g^p(x)g''(x) + h(x) = 0, \quad -k < x < 1, \quad p \geq 1, \quad g'(-k) = C, \quad g(1) = 0; \quad k > 0.$$

where C is a given real number and $h(x)$ is assumed to be a continuous increasing function defined on $[-k, +\infty)$. Sufficient conditions for existence and non-uniqueness of positive solutions to the problem are established. Furthermore, the solutions are shown numerically that for several sets of parameters values of p , C and k , the numerical results qualitatively agree very well with the analytical predictions. Physically, this non-uniqueness is related to multiple values of the skin friction.

The Math Department will provide refreshments 30 min. prior to the presentation.