SMSS Applied Mathematics Seminar

Modeling and computation of rotating polymeric fiber jets and application in forcespinning

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Abstract

In this seminar we first review modeling and simulation that have been carried out in the last two decades for nonlinear inviscid and viscous Newtonian rotating jets with curved centerlines. Next, we explain our recently developed modeling equations for the non-Newtonian polymeric fiber jets and calculate numerically the corresponding nonlinear solutions for quantities such as jet speed, radius, stretching rate, trajectory and strain rate versus different values of the arc length and the parameters that can represent effects due to rotation, friction, surface tension and relaxation time. We present application of such results in forcespinning process, which is a relatively new technology that uses centrifugal force due to the externally imposed rotational constraint to produce nanofibers from different materials with important technological applications.

Time: 12:15–13:15 pm
Place: BLHSB 1.312 (Brownsville) and Webinar in EMAGC 1.302 (Edinburg)
Date: Tuesday, November 14, 2017

Coffee and cookies will be served around 12:10 pm. For further information or for special accommodations, please contact Zhaosheng Feng at 665-7483 or via email at zhaosheng.feng@utrgv.edu.