1051-65-194   **Weiming Cao*** (`wcao@math.utsa.edu`), One UTSA Circle, San Antonio, TX 78249, and **Borries Demeler**, San Antonio, TX 78249. *Adaptive Finite Element Methods for Analytic Ultracentrifugation Analysis.*

Analytic ultracentrifugation analysis (AUC) is a commonly used tool in biochemstry and biology to determine various stoichiometries of the molecules in solutions. The ultracentrifugation experiments can be modeled by a system of advection-diffusion-reaction equations (the Lamm equations), and AUC is essentially an inverse problem to identify the coefficients in these equations. Therefore, efficient and accurate solution of these equations is critical to the resolution and reliablity of AUC. In this talk, we shall present our recent results on the development of the adaptive space-time finite element methods for solving the Lamm equations. Various systems involving ideal/non-ideal, interacting/non-interacting species are considered. (Received August 24, 2009)