

Applied Math Seminar scheduled on Friday, November 15, 2019, 11-12pm, L01328

Speaker: Prof. Mayya Tokman (UC Merced)

Title: Construction of efficient time integrators for stiff systems

Abstract:

In this talk we discuss construction of efficient time integrators that combine explicit, implicit or exponential integration approaches. We explain why such integrators are of interest in applications and present several classes of new methods such as exponential, implicit-exponential, explicit-exponential and hybrid methods. Building such scheme involves a number of challenges and offers opportunities to improve their efficiency through developing more efficient algorithms such as adaptive Krylov projection techniques which we will discuss. Several application problems where new methods allow for significant computational challenges will be presented. In particular, we discuss problems we are working on in computer graphics, plasma physics and weather and climate modeling.

About the speaker:

Mayya Tokman got her PhD in 2001 at CalTech. After some time at Virginia Tech she joined the Faculty at UC Merced where she is an Associate Professor. Her research group works on development of new numerical techniques and mathematical models that enable computer simulations of complex systems.

For more information, you can visit her homepage: <https://faculty.ucmerced.edu/mtokman/#home>