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**Tommaso Buvoli\*** (tbuvoli@ucmerced.edu), **Stéphane Gaudreault**  
(stephane.gaudreault2@canada.ca) and **Mayya Tokman** (mtokman@ucmerced.edu). *New  
Developments in Exponential Integration for Large Scale Stiff Systems.*

Over the past two decades, exponential integrators have emerged as an efficient class of time-stepping methods for solving stiff partial differential equations. For many application problems they can provide more accuracy and efficiency compared to fully implicit and semi-implicit integrators. In this talk we present a variety of exponential integrators including hybrid implicit-exponential (IMEXP) methods that combine exponential and rational functions. We will address theoretical and practical issues arising from the development of a fast integrators for different classes of problems. Construction and implementation of specific schemes for concrete applications such as shallow water equations and reactive flows will be discussed. (Received September 17, 2019)