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**James V Lambers\*** ([James.Lambers@usm.edu](mailto:James.Lambers@usm.edu)), 118 College Dr #5045, Hattiesburg, MS 39406-0001. *Solution of Time-Dependent PDE Through Component-wise Approximation of Matrix Functions*. Preliminary report.

Krylov subspace spectral (KSS) methods are high-order accurate, explicit time-stepping methods with stability characteristic of implicit methods. This “best-of-both-worlds” compromise is achieved by computing each Fourier coefficient of the solution using an individualized approximation, based on techniques from “matrices, moments and quadrature” for computing bilinear forms involving matrix functions. In this talk, it will be shown how this approach can be applied to nonlinear PDE. (Received July 11, 2011)