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**Rodrigo B Platte\*** (rbp@asu.edu), Arizona State University, P.O. Box 871804, Tempe, AZ 85287-1804, and **Jordan Martel**. *Stability of kernel methods for time-dependent partial differential equations on the circle and sphere.*

Conditions for stability of collocation methods based on radially symmetric kernels for time-dependent problems on the circle and sphere are presented. Of particular interest is the advection equation with variable coefficients. We show that on equally spaced nodes, discretization matrices of the convection operator have purely imaginary eigenvalues. Lax-stability for problems on the sphere when the collocation points come from certain polyhedra is also discussed. In both geometries, we demonstrate that spurious eigenvalues of discretization matrices grow almost linearly with perturbations off the set of ideal collocation points. (Received December 11, 2011)