1116-49-403 **Yuan Tian*** (tiany7@miamioh.edu), 301 S. Patterson Ave., BAC 230, Oxford, OH 45056, and **Boris Mordukhovich**. *Runge-Kutta Approximation and Optimization of Differential Inclusions.*

This talk concerns the Runge-Kutta approximation of the generalized Bolza type problem for dynamic systems governed by constrained differential inclusions. We construct an approximating Runge-Kutta sequence and prove that this sequence converges to the optimal solution. First we establish well-posedness of the Runge-Kutta discrete approximations in the sense of $W^{1,2}$ norm convergence to the trajectory for differential inclusions. Moreover, we build a Runge-Kutta discrete sequence of finite-dimensional optimization problems with a strong convergence of optimal solution. Finally, we derive necessary optimality conditions for the discretized Bolza problems via suitable generalized differential constructions of variational analysis. (Received August 30, 2015)