1014-49-1210 **Erika Asano*** (`easano@math.utk.edu`), Mathematics Department, 121 Ayres Hall, 1403 Circle Drive, Knoville, TN 37996-1300. *Optimal Control of Swinging Elements in a Parabolic Competition Model.* Preliminary report.

We consider a system of three nonlinear parabolic partial differential equations modeling a competition with three populations. One of the populations can switch its alliances between cooperation and competition with the other two populations to improve its strength. The control function measures this alliance, and we derive an optimality system to characterize the optimal control. We obtain some numerical results. (Received September 27, 2005)