

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Control of traveling localized spots¹ STEFFEN MARTENS, JAKOB LÖBER, HARALD ENGEL, Technische Universität Berlin, Institut für Theoretische Physik, 10623 Berlin, Germany, CHRISTOPHER RYLL, FREDI TRLTZSCH, Technische Universität Berlin, Institut für Mathematik, 10623 Berlin, Germany — Besides traveling waves, moving localized spots represent yet another important class of self-organized spatio-temporal structures in non-equilibrium dissipative systems. In this talk, we present two different approaches to guide localized spots along a pre-given trajectory. First, an analytical solution for the control – being an open-loop control – is proposed which attempts to shift the spot’s “center of mass” according to a given protocol of movement without disturbing its profile [J. Löber and H. Engel, PRL **112**, 148305; J. Löber, PRE **89**, 62904]. The control signal is expressed in terms of the uncontrolled spot profile and its propagation velocity; rendering detailed informations about the reaction kinetics unnecessary. Secondly, optimal control with Tikhonov regularization is used. Noteworthy, both control schemes coincide for vanishing regularization term. In particular, our analytic control is an excellent initial guess for the numerical solution of optimal control problems; thereby achieving a substantial computational speedup [C. Ryll et al., *Control of Self-Organizing Nonlinear Systems* (Springer, Berlin-Heidelberg, 2016)].

¹German Science Foundation DFG through the SFB 910 ”Control of Self- Organizing Nonlinear Systems”

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Date submitted: 18 Nov 2016

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