1044-35-142 **Anna Ghazaryan*** (aghazaryan@math.ku.edu), Department of Mathematics, University of Kansas, 405 Snow Hall, 1460 Jayhawk Blvd, Lawrence, KS 66045, and **Margaret Beck** and **Bjorn Sandstede**. *Nonlinear convective stability of traveling fronts near Turing and Hopf instabilities.*

Fronts are traveling waves that connect two different spatially homogeneous rest states. We analyze the instability of a front in a reaction-diffusion system when the instability is caused by the rest state behind the front undergoing a supercritical Turing or Hopf bifurcation. On the linear level there exists an exponentially weighted norm that stabilizes the front, i.e., the instability of the front is convective. It will be very restrictive to assume that the nonlinearity will be well behaved in that particular norm. For example, this is not true for polynomial nonlinearities. Therefore the nonlinear stability cannot be simply inferred from the linear stability in the weighted norm. In a joint work with M. Beck and B. Sandstede, we show that the amplitude of any emerging pattern can be controlled in terms of the bifurcation parameter, and then, using the interplay of norms with and without weight, we prove that, in the coordinate frame that moves together with the front, the pattern is pushed away from the interface of the front. The result implies the convective character of the instability on the nonlinear level. (Received August 29, 2008)