Titel.
Patterns in biological systems --
Analytical and numerical aspects of spike formation

Abstract.
First a short introduction to pattern formation in
Turing systems is given.

As a particular case, we consider the Gierer-Meinhardt system
in the limit of small diffusivity of the activator and
large diffusivity of the inhibitor. We numerically compute
the time-dependent behaviour and show
that very often for large times spikes are formed, even
if the intermediate states vary.

Then we analytically investigate the stability
of spikes and show that in a bounded domain
there exists a maximum number of stable spikes.
Analytical and numerical results are compared.

We outline a number of applications and current/future projects.