

**q -NAGUMO NORMS AND FORMAL SOLUTIONS OF SINGULARLY
PERTURBED q -DIFFERENCE EQUATIONS**

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JOINT WORK WITH ALBERTO LASTRA.

ABSTRACT. The aim of this talk is to give a q -analogous to the classical Nagumo norms, familiar in the framework of analytic PDEs. These norms turn out to be useful in the study of the divergence rate of formal power series solutions of some families of analytic q -difference equations in several variables. In fact, we will find such rate for equations involving irregular singularities (normal crossings) and perturbation parameters. Finally, by studying confluence, i.e., letting $q \rightarrow 1$, we recover the Gevrey order of formal solutions of PDEs with the same singular type.

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