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**Robert Roussarie\*** (roussari@u-bourgogne.fr), I.M.B., Université de Bourgogne, B.P. 47 870, 21 078 Dijon, France. *SOME NEW RESULTS ON SLOW-FAST SYSTEMS.*

I want to present some new results on 2-dimensional *slow-fast systems* obtained in collaboration with Freddy Dumortier. Principal questions on these systems are about bifurcations of their so-called *canard cycles* (which always appear in family). We have studied asymptotics of canard cycles by using a geometrical tool : *blowing up* the system at its turning points. This allows to study different mechanisms for creating canard cycles and to compute their asymptotics which depend principally on the number of *breaking parameters* or levels (which parametrized the family of canard cycles). In generic cases, these asymptotics are given in terms of *slow divergence integrals* which can be computed in an algebraic way (when the system is polynomial). From this computation we can deduce several explicit bifurcation results for slow-fast systems. As a by-product, we have constructed in collaboration with Daniel Panazzolo, *some classical Liénard equations of degree 7 which exhibit at least 4 limit cycles*. This result contradicts an old conjecture of A. Lins Neto, W. de Melo and C.C. Pugh. (Received September 04, 2009)