

## MORE LIMIT CYCLES FOR COMPLEX DIFFERENTIAL EQUATIONS WITH THREE MONOMIALS

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In 2015 it was proved that for complex differential equations with three monomials,  $\dot{z} = Az^k\bar{z}^l + Bz^m\bar{z}^n + Cz^p\bar{z}^q$ , with  $k, l, m, n, p, q$  non-negative integers and  $A, B, C \in \mathbb{C}$ , there is no upper bound for their number of limit cycles. More concretely, if  $N = \max(k+l, m+n, p+q)$  and  $H_3(N) \in \mathbb{N} \cup \{\infty\}$  denotes the maximum number of limit cycles of the above systems with this restriction, it was proved that for  $N \geq 3$  odd,  $H_3(N) \geq (N + 3)/2$ .

In this talk I will present some improvements of this lower bound, proving that for  $N \geq 4$ ,  $H_3(N) \geq N - 3$  and that for some values of  $N$  this new lower bound is  $N + 1$ . Finally, I will show our attempts to determine  $H_3(2)$ .

This is a joint work (still in progress) with B. Coll, A. Gasull and R. Prohens.