

## **More limit cycles than expected in Lienard equations**

**Daniel G. Panazzolo**  
(joint with F. Dumortier and R. Roussarie)

### **Abstract**

In 1977, Lins Neto, de Melo and Pugh conjectured that the Lienard system  $x' = y - P(x)$ ,  $y' = -x$  has at most  $k$  limit cycles for  $P(x)$  a polynomial of degree  $2k + 1$ . Looking at a suitable compactification for the space of all Lienard systems of a fixed degree  $k$ , we give a counter-example to this conjecture for  $k = 3$ .