

# PERIOD FUNCTION OF PLANAR TURNING POINTS

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In this talk we consider slow-fast polynomial Liénard equations of center type and we study the period function of planar generic and non-generic turning points. In the generic case (resp. non-generic) a non-degenerate (resp. degenerate) center disappears in the limit  $\epsilon \rightarrow 0$ , where  $\epsilon \geq 0$  is the singular perturbation parameter. We show that, for each  $\epsilon > 0$  and  $\epsilon \sim 0$ , the period function is monotonously increasing (resp. has exactly one minimum). The result is valid in an  $\epsilon$ -uniform neighborhood of the turning points. We also solve a part of the conjecture about a uniform upper bound for the number of critical periods inside classical Liénard systems of fixed degree, formulated by De Maesschalck and Dumortier in 2007. We use singular perturbation theory and the family blow-up.

Joint work with: Renato Huzak.