# Computing analytically periodic orbits of differential equations

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We provide an analytic algorithm for computing periodic orbits of differential equations in dimension $n \geq 2$ having an equilibrium point with eigenvalues $\pm\omega i$ and $\rho_k$ with $\omega \neq 0$ and if $n \geq 3$ then $\rho_k \in \mathbb{R}$ for $k = 3, \ldots, n$. Moreover, our method needs that when we translate the equilibrium point at the origin of coordinates, the non–linear part of the translated differential equation depends on a multiplicative small parameter. We provide two applications of this algorithm, one related with a 3–dimensional differential equation of L. Chua's class, and the other to a 5–dimensional differential equation due to E.N. Lorenz.

## References

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