

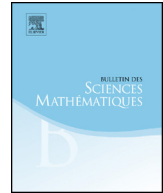


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# The period function and the Harmonic Balance Method



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## ABSTRACT

In this paper we consider several families of potential non-isochronous systems and study their associated period functions. Firstly, we prove some properties of these functions, like their local behavior near the critical point or infinity, or their global monotonicity. Secondly, we show that these properties are also present when we approach to the same questions using the Harmonic Balance Method.

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## 1. Introduction and main results

Given a planar differential system having a continuum of periodic orbits, its period function is defined as the function that associates with each periodic orbit its period. To determine the global behavior of this period function is an interesting problem in the qualitative theory of differential equations either as a theoretical question or due to its appearance in many situations. For instance, the period function is present in

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