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An Explicit Expression of the First Liapunov and Period Constants with Applications*

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In this paper, we study systems in the plane having a critical point with pure imaginary eigenvalues, and we search for effective conditions to discern whether this critical point is a focus or a center; in the case of it being a center, we look for additional conditions in order to be isochronous. We stress that the essential differences between the techniques used in this work and the more usual ones are basically two: the elimination of the integration constants when we consider primitives of functions (see also Remark 3.2) and the fact that we maintain the complex notation in the whole study. Thanks to these aspects, we reach with relative ease an expression of the first three Liapunov constants, v_3, v_5, and v_7, and of the first two period ones, p_2 and p_4, for a general system. As far as we

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