

## Degenerate Hopf Bifurcations in Discontinuous Planar Systems

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We study the stability of a singular point for planar discontinuous differential equations with a line of discontinuities. This is done, for the most generic cases, by computing some kind of Lyapunov constants. Our computations are based on the so called  $(R, \theta, p, q)$ -generalized polar coordinates, introduced by Lyapunov, and they are essentially different from the ones used in the smooth case. These Lyapunov constants are also used to generate limit cycles for some concrete examples. © 2001 Academic Press

### 1. INTRODUCTION

In smooth planar differential equations the stability of a nondegenerate critical point with complex eigenvalues is reduced to the computation of the so called *Lyapunov constants*; see [3], for instance. Furthermore these

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