

## Characteristics of Period-Doubling Bifurcation Cascades in Quasi-discontinuous Systems

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**Abstract:** Many systems can display a very short, rapid change stage (quasi-discontinuous region) inside a relatively very long and slow change process. A quantitative definition for the "quasi-discontinuity" in these systems has been introduced. With the aid of a simplified model, some extraordinary Feigenbaum constants have been found inside the period-doubling cascades, the relationship between the values of the extraordinary Feigenbaum constants and the quasi-discontinuity of the system has also been reported. The phenomenon has been observed in Pikovsky circuit and Rose-Hindmarsh model.

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**Key words:** quasi-discontinuous systems, period-doubling bifurcation, extraordinary Feigenbaum constants

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