

## Part II

# Extensions to Non-conservative Systems

In this part of the book, we show that the LPT concept which was initially developed for conservative nonlinear models can be efficiently extended. This extension allows taking into account the external periodic forcing and damping as well as feedback which leads to existence of self-sustained oscillations. It is significant that, contrary to conservative models, in this case even the asymptotic equations in the main approximation are not integrable. Therefore, the LPTs as fundamental non-stationary solutions provide an unique possibility to understand and describe analytically a wide class of non-stationary resonance processes (similarly to description of the stationary processes on non-conservative systems in the frameworks of the NNMs concept). Moreover, the LPT concept turns out to be useful for understanding and analytical description of such significant processes as autoresonance in the nonlinear systems with variable parameters.