

# On the gap between autonomous and non-autonomous dynamical systems generated by infinite delay differential equations for the study of their asymptotic behaviour\*

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## Abstract

We analyze sufficient conditions to ensure existence of attractors (global and pullback) for infinite delay differential equations. These models are useful in physics, chemistry, and biology among other sciences.

On one hand, we will point out same intrinsic difficulties that both, autonomous and non-autonomous cases, have in order to study their asymptotic behaviour (namely, the lack of compactness). On other hand, we will specially remark how the infinite delay character makes a difference in the dissipative assumptions (even in the phase space) we have to deal with for the non-autonomous case,

$$x'(t) = F_0(t, x(t)) + F_1(t, x(t - \rho(t))) + \int_{-\infty}^0 b(t, s, x(t+s))ds,$$

contrary to the autonomous case.

## References

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