

A new approach to asymptotic integration of differential equations

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Asymptotic integration of differential equations is a classical research topic in applied mathematics. There is large body literature on the subject concerning a general class of second-order differential equations $x'' = f(t, x)$. The problem is to find conditions on the function $f(t, x)$ that guarantee the existence of solutions asymptotic to $a + bt$ as $t \rightarrow \infty$ for any given real numbers a and b .

In this talk, we will give a literature review, and then provide a new approach that can be used to study such problems for a class of more general differential equations. Our technique is different than the traditional ones used in the literature; it is a constructive approach applicable to various types of differential equations as well as difference equations, delay differential equations, and impulsive differential equations.

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