

Divergent series and differential equations

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R sum  en anglais We develop the various known approaches to the summability of a class of series that contains all divergent series solutions of ordinary differential equations in the complex field. We first study the case when the divergence depends only on one parameter (the level k or critical time) called k -summability. We study then generalizations to the case when the divergence depends on several levels called multi-summability. We prove the coherence of the definitions and their equivalences and we provide some applications. We also provide the necessary basics on Gevrey asymptotics and a survey of sheaf theory, cohomology and linear ordinary differential equations. Various examples are worked on, including the example of tangent-to-identity germs of diffeomorphisms in the complex plane.

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