

On some recent results regarding Laplace transform

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Abstract. As a common-knowledge procedure, Laplace transform is used in applied mathematics, physics, engineering and computation in general. By giving a comparative overview of Laplace transforms in real space setting, Banach spaces, Banach algebras and Banach modules, we will emphasize the necessity of its studying. This lecture will firstly analyze Laplace transform procedure proposed earlier by Gautchi and Milovanovic. The technique mentioned will next be used to develop appropriate method both in Banach spaces and unital commutative Banach algebras, as well as in Banach modules. Secondly, we will discuss the existence of originals (the inverse Laplace transforms) of harmonic and hyper-harmonic sequences (in accordance with regularity criteria for Sylvester modular equation) and use these results to determine the sums of some slowly convergent Banach-algebra-valued series. These findings are obtained through joint work with Bogdan Djordjevic, and in solo work done by lecturer. [1]

Keywords: Laplace transform, Banach algebras, Banach modules, Sylvester equation, Abstract series

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