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**Marat V. Markin\*** (mmarkin@csufresno.edu), Department of Mathematics, California State University, Fresno, 5245 North Backer Avenue, M/S PB108, Fresno, CA 93740-8001. *On the Gevrey ultradifferentiability of weak solutions of an abstract evolution equation with a scalar type spectral operator.* Preliminary report.

Found are conditions on a scalar type spectral operator  $A$  in a complex Banach space necessary and sufficient for all weak solutions of the evolution equation

$$y'(t) = Ay(t), \quad t \geq 0,$$

to be strongly Gevrey ultradifferentiable of order  $\beta \geq 1$ , in particular analytic or entire, on  $[0, \infty)$  or  $(0, \infty)$ . Certain inherent smoothness improvement effects are analyzed. It is shown that, if all weak solutions are Gevrey ultradifferentiable of orders  $0 \leq \beta < 1$ , then the operator  $A$  is necessarily bounded. (Received September 23, 2017)