1062-34-132 **Gaston M N'Guerekata*** (`Gaston.N'Guerekata@morgan.edu`), 1700 East Cold Spring Lane, Baltimore, MD 21251, **Van Minh Nguyen** (`vnguyen@westga.edu`), Department of Mathematics, University of West Georgia, Carrollton, GA 30118, and **Stefan Siegmund**, Dresden University of Technology, Department of Mathematics, 01062 Dresden, Germany. *On bounded solutions of periodic evolution equations.*

We consider the existence and uniqueness of bounded solutions of the periodic evolution equations $u' = A(t)u + \epsilon H(t,u) + f(t)$, where $A(t)$ is an unbounded operator depending 1-periodically on t, H is periodic in t with the same period as A, ϵ is small, and f is a bounded and continuous function not necessarily uniformly continuous. We present a new approach to the spectral theory of functions via the concept of "circular spectrum". Then we apply it to study a similar problem for the difference equation $u(t) = B(t)u(t-1) + f(t)$, B is a 1-periodic operator in a Banach space X, continuous in t, f is an X-valued bounded function. The solution of this problem turns out to yield a solution to the problem for the unperturbed evolution equations with general conditions on f. For small ϵ we show that the perturbed equation inherits some properties of the linear unperturbed equation on the existence and uniqueness of the bounded solutions. These extend recent results in the direction, saying that if the unitary spectrum of the monodromy operator does not intersect the circular spectrum of f, then the evolution equation has a unique mild solution with its circular spectrum contained in the circular spectrum of f. (Received August 03, 2010)