

# GENERALIZED WELL-POSEDNESS OF HYPERBOLIC VOLTERRA EQUATIONS OF NON-SCALAR TYPE\*

Marko Kostić<sup>†</sup>

## Abstract

In the present paper, we introduce the class of  $(A, k)$ -regularized  $C$ -pseudoresolvent families, analyze themes like generation, hyperbolic perturbations, regularity and local properties, and furnish several illustrative examples. The study of differentiability of  $(A, k)$ -regularized  $C$ -pseudoresolvent families seems to be new even in the case  $k(t) \equiv 1$  and  $C \equiv I$ .

MSC: 47D06, 47D60, 47D62, 47D99

**keywords:**  $(A, k)$ -regularized  $C$ -pseudoresolvent family, hyperbolic Volterra equation, well-posedness

## 1 Introduction and preliminaries

Our intention in this paper is to enquire into the basic structural properties of a fairly general class of (local)  $(A, k)$ -regularized  $C$ -pseudoresolvent families. This class of pseudoresolvent families is one of the main tools in the analysis of ill-posed hyperbolic Volterra equations of non-scalar type. It is worthwhile to mention here that there are by now only a few references concerning non-scalar evolutionary Volterra equations (cf. [10]-[11] and [23]).

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<sup>†</sup>[marco.s@verat.net](mailto:marco.s@verat.net) Faculty of Technical Sciences Trg Dositeja Obradovića 6 21125 Novi Sad Serbia; Partially supported by grant 174024 of Ministry of Science and Technological Development, Republic of Serbia.