

## Report on the paper

### Laguerre Expansions of $C$ -regularized semigroups Functions

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Generalized Laguerre polynomials are orthogonal polynomials with respect to some weight on the half-line. Laguerre expansions of  $C_0$ -semigroups are studied in [1]. In the paper under consideration, results of [1] are generalized to  $C$ -regularized semigroups. Results are new. The referee recommends to **accept** the paper.

**General remarks.** It is unclear to the referee why the authors formulate some results not in the full generality. Namely, parts 1 and 2(a) of Theorem 2.1 are fulfilled for  $\alpha > -1$ , part 1 of Theorem 2.2 is fulfilled for  $\alpha > 0$ , part 2 of Theorem 2.2 is fulfilled for  $x \in E$ . Proofs remain the same.

### List of misprints.

p. 1, 7th line of Introduction: replace first (given) names of the authors of [1] by last (family) names.

p. 1, 8th line of Introduction: begin the sentence “in this work...” with capital letter: “In this work...”.

p. 1, line 6 from below: delete “in  $B(E)$ ”

p. 2, line 2: replace capital letter  $X$  by  $x$  in  $\frac{(-1)^n}{n!} X^n$ .

p. 3, line 8 from below: replace “equality (1)” by “property 1”.

p. 3, line 4 from below: delete second “o” in the word “problem”.

p. 4, formula (7): replace  $(R_C(\lambda, W))^{-n-1}$  by  $(\lambda I - W)^{-n-1} C$ .

p. 4, formula (8): add  $t$  after  $d$ .

p. 4, line 5 from below: add  $C$  before  $x$  in the end of the formula.

p. 4, line 2 from below: add  $e^{\omega t}$  before  $\Sigma$  and replace  $n$  by  $m$  after  $\Sigma$  (3 times;  $m$  is the index in  $\sum_{m=0}^n$ ).

p. 6, line 4: delete it (it is the same as line 3).

p. 6, line 7 from below: replace  $n$  by  $m$  after  $\Sigma$  (1 time;  $m$  is the index in  $\sum_{m=n+1}^{\infty}$ ).

p. 6, line 1 from below: delete first  $x$  in  $\int_0^{\infty}$ ; delete first “(” and last “)” in  $\int_0^{\infty}$ .

p. 7, lines 1-5: must be  $W - \omega I$  instead of  $\omega I - W$  in the first line and correspondent changes in the next lines.

p. 7, line 9: replace  $|\psi_{n-q, \alpha+q}(t)(e^{-\omega t} T(t))x|$  by  $|\psi_{n-q, \alpha+q}(t)| \|e^{-\omega t} T(t)\|$ .

p. 7, formula (11): add  $C$  before  $x$  (2 times).

p. 8, line 7: add  $e^{\omega t}$  before  $\Sigma$ .

p. 9, line 7 from below: add “)” after  $[\frac{d^{n-1}}{dt^{n-1}}(e^{-t} t^{n+\alpha}$ .

p. 9, line 3 from below: replace  $(R_C(t, W - \omega I))^{-n-1}$  by  $((t + \omega)I - W)^{-n-1}C$ .

p. 10, lines 2, 3: replace  $e^{-ut}$  by  $e^{-u}$ .

p. 10, line 8 from below: replace  $\leq$  by  $=$ .

p. 11, lines 8, 9, 10: add  $C$  before  $(f)(s)$ .

p. 11, line 11: delete “(” before  $(1 - m)^{-n-\alpha-1}$  and add  $C$  before  $f$ .

p. 11, line 13: delete “-” in  $e^{-sm(\cdot)}$  ( $m$  is assumed to be non-positive).

p. 13, reference [11]: delete last letters in the family names of the authors: must be “M. Mosallanezhad, M. Janfada”.