

***t*-basicity of Faber Polynomials in X -valued Smirnov Classes**

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ABSTRACT

This study investigates X -valued Lebesgue space (so called Bochner space) $L_p(\Gamma; X)$, $1 < p < +\infty$ where Γ is a closed, simple Lyapunov or Radon curve in the complex plane. We introduce the concept of a t -basis for these spaces and explore systems of generalized Faber polynomials corresponding domains $\text{int } \Gamma$ and $\text{ext } \Gamma$. Operators acting between Hardy-Bochner classes $H_p^\pm(X)$ and $L_p(\Gamma; X)$ spaces are defined, with X being a UMD (unconditional martingale difference) space. The invertibility of these operators is proven. Furthermore, we define X -valued Smirnov classes $E_p^\pm(X)$ for the corresponding domains $\text{int } \Gamma$ and $\text{ext } \Gamma$, respectively, and demonstrate that Faber polynomials form a t -basis for Smirnov-Bochner classes. Using this, we establish the t -basicity of the double system of Faber polynomials for Bochner spaces. Lastly, some properties of Smirnov-Bochner classes are studied.
