

## Weak integration of operator valued functions

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**Abstract.** For weakly\* integrable operator valued function  $\mathcal{A} : \Omega \rightarrow \mathcal{B}(\mathcal{H})$  we investigate whether its integral belongs to the appropriate ideal of compact operators. Furthermore, for a mononormalizing symmetric norming function  $\Phi$  and  $\mathcal{C}_\Phi(\mathcal{H})$ -valued weakly\* measurable function  $\mathcal{A}$ , if for every pair of orthonormal systems  $(e_n)_{n \in \mathbb{N}}$  and  $(f_n)_{n \in \mathbb{N}}$  it holds that

$$\int_{\Omega} \Phi((\langle \mathcal{A}_t e_n, f_n \rangle)_{n \in \mathbb{N}}) d\mu(t) < +\infty,$$

we show that  $\mathcal{A}$  is Pettis  $\mathcal{C}_\Phi(\mathcal{H})$ -integrable. Additionally, in the case where  $\mu(\Omega) < +\infty$ , we provide necessary and sufficient conditions for the  $\mathcal{C}_\infty(\mathcal{H})$ -valued function  $\mathcal{A}$  to be Pettis integrable.

**Keywords:** Integration in Banach spaces; Operator valued functions; Symmetrically norming functions; Ideals of compact operators.

### References

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