Operator-valued measures and linear operators

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Abstract. We study operator-valued measures $m : \Sigma \to \mathcal{L}(X,Y)$, where $\mathcal{L}(X,Y)$ stands for the space of all continuous linear operators between real Banach spaces $X$ and $Y$ and $\Sigma$ is a $\sigma$-algebra of sets. We extend the Bartle-Dunford-Schwartz theorem and the Orlicz-Pettis theorem for vector measures to the case of operator-valued measures. We generalize the classical Vitali-Hahn-Saks theorem to sets of operator-valued measures which are compact in the strong operator topology. We obtain these results as consequences of the properties of the corresponding operators $T_m : L^\infty(X) \to Y$. 