Rotund and smooth renormings of the Lebesgue-Bochner space $L^1(\mu, X)$

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The lecture is based on recent two joint papers of Sebastian Lajara and myslef. Let $(X, \|\cdot\|)$ be a Banach space and μ be a probability measure. Using Luxemburg norm associated to a suitable Orlicz function, we construct an equivalent norm $\||\cdot\||$ on the Lebesgue-Bochner space $L^1(\mu, X)$ with the property: If $\|\cdot\|$ on X is rotund (or uniformly rotund in every direction, or locally uniformly rotund, or midpoint locally uniformly rotund, or Gateaux smooth, or uniformly Gateaux smooth), then the norm $\||\cdot\||$ has the respective property (or a combination of them). Moreover, if $\|\cdot\|$ on X is uniformly rotund (or uniformly Fréchet smooth, or has both latter properties), then the restriction of $\||\cdot\||$ to any reflexive subspace of $L^1(\mu, X)$ is such.