

Title: Normalized Bloch spaces associated with tensor products of Banach spaces.  
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### Abstract

Applying the theory of tensor products of Banach spaces, we study the Banach spaces of normalized Bloch mappings from  $\mathbb{D}$  (the open complex unit disc) into  $X^*$  (the dual of a complex Banach space) that can be represented canonically as the dual of the completion of the tensor product  $\text{lin}(\Gamma(\mathbb{D})) \otimes_{\alpha} X$ , where  $\text{lin}(\Gamma(\mathbb{D}))$  is the space of  $X$ -valued Bloch molecules on  $\mathbb{D}$  and  $\alpha$  is a Bloch cross-norm on  $\text{lin}(\Gamma(\mathbb{D})) \otimes X$ . We show that the normalized spaces of Bloch maps,  $p$ -summing Bloch maps and Bloch maps factorizing through a Hilbert space admit such a representation. On the converse problem, we characterize when a Banach normalized Bloch space  $B(\mathbb{D}, X^*)$  is isometrically isomorphic to  $(\text{lin}(\Gamma(\mathbb{D})) \hat{\otimes}_{\alpha} X)^*$  for some Bloch cross-norm  $\alpha$ , in terms of the compactness of its unit ball with respect to the weak\* Bloch topology.