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A new class of weakly K-analytic Banach spaces

Abstract: In this paper we define and investigate a new subclass of those Banach spaces which are K-analytic in their weak topology; we call them strongly weakly K-analytic (SWKA) Banach spaces. The class of SWKA Banach spaces extends the known class of strongly weakly compactly generated (SWCG) Banach spaces (and their subspaces) and it is related to that in the same way as the familiar classes of weakly K-analytic (WKA) and weakly compactly generated (WCG) Banach spaces are related.
We show that: (i) not every separable Banach space is SWKA; (ii) every separable SWKA Banach space not containing ℓ^1 is Polish; (iii) we answer in the negative a question posed in [S-W] by constructing a subspace X of the SWCG space $L^1[0,1]$ which is not SWCG.