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A counterexample concerning contractive projections of real JB^*-triples. (English summary)

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The so-called (complex) JB^*-triples, certain complex Banach spaces carrying a Jordan algebra ternary composition, play a fundamental role in infinite-dimensional holomorphy because the unit balls D of JB^*-triples are precisely the bounded Hermitian symmetric domains in the Banach space setting. Two basic results concerning JB^*-triples assert that (i) the completely integrable holomorphic vector fields on D are polynomial of degree ≤ 2 (thus giving rise to the Jordan triple product) and (ii) the range of a contractive projection on a JB^*-triple is again a JB^*-triple in a natural way. Symmetric domains and Jordan triples can also be considered in the real case, leading to the concept of real JB^*-triple. In this paper the author gives simple counterexamples to the properties (i) and (ii) for real JB^*-triples. In particular, the complex rank-1 JB^*-triple $\mathbb{C}^2$ has a real-linear contractive projection whose range is not a real JB^*-triple under the projected triple product.

Reviewed by *Harald Upmeier*

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Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.