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On the Jordan structure of ternary rings of operators.

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Let H, K be complex Hilbert spaces and $L(H, K)$ be the Banach space of operators $x\colon H \to K$. A ternary ring of operators (TRO) is a norm closed subspace in $L(H, K)$ which is also closed under the ternary product $[xyz] = xy^*z$. TROs were introduced by M. R. Hestenes [Arch. Rational Mech. Anal. **11** (1962), 138–194; MR0150166 (27 #169)], who proved a structure theorem in the finite-dimensional case. Infinite-dimensional TROs have appeared in a number of publications [e.g., M. M. Kaur and Z.-J. Ruan, J. Funct. Anal. **195** (2002), no. 2, 262–305; MR1940357 (2004c:46116)].

The aim of this note is to give a characterization of infinite-dimensional TROs in the spirit of Hestenes' theorem. The proof uses the theory of JC^*-triples. (It is known that TROs equipped with the Jordan triple product $\{xyz\} = (xy^*z + zy^*x)/2$ are JC^*-triples.)

Reviewed by *Khristo N. Boyadzhiev*