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**Novel critical point in the random quantum Ashkin-Teller model**

FAWAZ HRAHSHEH, THOMAS VOJTA, Missouri University of Science and Technology — The first order phase transition of the quantum Ashkin-Teller model has been intensely studied over many decades. In this work, we study the effect of disorder on this quantum phase transition using a strong-disorder renormalization group approach. Specifically, we develop an implementation of the strong-disorder renormalization group that works for both weak and strong four-spin couplings. For large four-spin coupling, we find a novel type of infinite-randomness fixed point. We investigate the critical properties of this fixed point, and we discuss broader implications for the fate of the first-order quantum phase transitions in disordered systems.

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