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## Has Compelling Experimental Evidence for Order-by-Disorder at Last Been Found in a Frustrated Magnetic Material?

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In some magnetic systems, known as frustrated magnets, the lattice geometry or the competition between different spin-spin interactions can lead to a sub-exponentially large number of accidentally degenerate classical ground states. Order-by-disorder (ObD) is a concept of central importance in the field of frustrated magnetism. Saddled with large accidental degeneracies, a subset of states, those that support the largest quantum and/or thermal fluctuations, may be selected to form true long-range order. ObD has been discussed extensively on the theoretical front for over 30 years and proposed to be at play in a number of experimental settings. Unfortunately, convincing demonstrations of OBD in real materials have remained scarce. In this talk, I will review the phenomena of thermal and quantum of order-by-disorder and discuss how recent work may have evinced compelling evidence for ObD in some frustrated pyrochlore oxide antiferromagnetic materials.