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Condensation of Anyons in Frustrated Quantum Magnets[1]
ROLANDO SOMMA, CRISTIAN BATISTA, Los Alamos National Laboratory —
One dimensional quantum magnets can realize exotic states of matter such as Luttinger liquids, valence bond solids, and spin supersolids. A unique feature of 1D systems is that transmutations of particle statistics preserve the range and local nature of interactions. This is the main reason behind the success of spin-fermion transformations, such as the Jordan-Wigner mapping, for solving 1D quantum magnets. A simple generalization of such transformations allows for a mapping between spins and anyons, unusual particles that generalize the concepts of bosons and fermions. By exploiting this generalization, in this talk we will present the exact ground states of S=1/2 frustrated XXZ ladders, and introduce an efficient method for computing the relevant correlation functions. The novel states we find are *anyon condensates* that spontaneously break the Hamiltonian symmetry associated with the particle-number conservation. In contrast to the familiar Bose-Einstein condensates, the condensed particles satisfy anyonic statistics.

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Rolando Somma
Los Alamos National Laboratory

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