

Abstract Submitted
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Quantum torus chain MINGPU QIN, Institute of Physics, Chinese Academy of Sciences, JON MAGNE LEINAAS, Department of Physics, University of Oslo, SHINSEI RYU, Department of Physics, University of Illinois at Urbana-Champaign, EDDY ARDONNE, Nordita, Royal Institute of Technology and Stockholm University, TAO XIANG, Institute of Physics, Chinese Academy of Sciences and Institute of Theoretical Physics, Chinese Academy of Sciences, DUNG-HAI LEE, Department of Physics, University of California at Berkeley and Materials Sciences Division, Lawrence Berkeley National Laboratory — We introduce a set of one-dimensional quantum lattice models which we refer to as the quantum torus chain. These models have discrete global symmetry and projective on-site representations. They possess an integer-valued parameter which controls the presence or absence of frustration. Depending on whether this parameter is even or odd, these models exhibit either gapped symmetry-breaking phases with isolated critical points or gapped symmetry-breaking phases separated by gapless phases. We discuss the property of these phases and phase transitions for two special values of the parameter and point out many open problems.

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