## Joint annual meeting of Swiss and Austrian Physical Societies 2017



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## [124] Extending Haldane's conjecture to SU(3) spin chain systems

Thursday 24 August 2017 15:00 (15 minutes)

We apply field theory methods to SU(3) symmetric Heisenberg chains in the fully symmetric representation, with p boxes in the Young tableau, mapping them into a SU(3)/(U(1) × U(1)) non-linear  $\sigma$ -model with a non-trivial topological term and a topological angle  $\theta = 2\pi p/3$ . Based on this mapping we argue that SU(3) spin chains are gapped for p = 3m, while gapless for  $p = 3m \pm 1$  (for integer m). This is confirmed by Monte Carlo calculations on the  $\sigma$ -model. We further discuss the phase diagram and the renormalization flow of the  $\sigma$ -model, and its implications on spin chains.

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