Symmetry fractionalization in SU(2n) antiferromagnetic Heisenberg chains[1] ANDREAS WEICHSELBAUM, Ludwig Maximilians University, THOMAS QUELLA, University of Cologne — We explore generalizations of the Affleck-Kennedy-Lieb-Tasaki (AKLT, 1987) model for spin-1 antiferromagnetic Heisenberg chains to higher-rank SU(2n) symmetries. In particular we show that by proper tuning of higher order spin interactions there also exist exact low-dimensional matrix-product ground states with fractionalized edge states, and that these states are adiabatically connected to the ground state of the plain SU(2n) Heisenberg model. The parameter space is explored using state of the art density matrix renormalization group (DMRG), explicitly utilizing SU(N) symmetry up to N=6 based on the QSpace tensor library.

Andreas Weichselbaum
Ludwig Maximilians University