

## On knots with no 3-state

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**Abstract.** Kauffman introduces the state model for a Jones polynomial, where the number of circles in each state is an important quantity. For a positive integer  $k$ , a  $k$ -state of a (classical or virtual) knot diagram is such a state consisting of  $k$  circles. It is easy to see that any non-trivial diagram has 1- and 2-states both. In this talk, we determine knot diagrams with no 3-states via Gauss diagrams, and give several properties related to the integer-writhes, upper and lower knot groups, and Miyazawa polynomials.