

# Signed Gordian distance and Jones polynomials

Toshifumi Tanaka

Osaka City University Advanced Mathematical Institute

**Abstract.** Recently, Y. Nakanishi, T. Hasegawa and S. Yamada have investigated the Gordian distance  $d$  between two knots with low crossing number using Alexander matrices, signatures and a result of H. Murakami concerning the Gordian distance between a knot and a two-bridge knot. Then Nakanishi has given a problem to detect  $d(5_2, 6_1)$ ,  $d(5_2, 6_1^*)$ ,  $d(5_2, 6_2)$ ,  $d(6_1, 6_2^*)$  and  $d(6_1, 6_3)$ . In this talk, first we define the signed Gordian distance and show that both  $d(5_2, 6_1)$  and  $d(6_1, 6_2^*)$  are two by using signatures and Jones polynomials. We also introduce a lower bound for the Gordian distance in terms of the Q-polynomial. Finally, we show a list of results of computations for the Gordian distance for knots with crossing number less than or equal to eight.