1095-57-89 **Naoko Kamada*** (kamada@nsc.nagoya-cu.ac.jp), Graduate School of Natural Sciences, Nagoya City University, 1 Yamanohata, Mizuho-cho, Mizuho-ku, Nagoya, Aichi 467-8501, Japan.

Surface pole-bracket polynomials of virtual knots and twisted knots.

Dye and Kauffman defined a surface bracket polynomial for a virtual knot diagram, or a knot diagram on a closed oriented surface, that is a linear sum of states on a surface whose coefficients are one-variable polynomials, and it dominates the f-polynomial. On the other hand, Dye and Kauffman, and Miyazawa introduced the multi-variable polynomial invariant (the DKM polynomial), which is a refinement of the f-polynomial. First we generalize the surface bracket polynomial so that the states on a surface may have some poles, called pole-states on a surface, and it dominates the DKM polynomial. We call it the surface pole-bracket polynomial. The second result is on a twisted knot. The notion of a twisted knot, introduced by Bourgoin, is a non-orientable version of a virtual knot. A twisted knot corresponds in general to the stable equivalence class of a knot in the twisted I-bundle over a non-orientable surface. The f-polynomial and the DKM polynomial were also defined for a twisted knot diagram by Bourgoin and the author. In this talk, we also consider the surface pole-bracket polynomial for a twisted knot diagram or a knot diagram on a closed non-orientable surface. (Received August 31, 2013)