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Normal forms on virtual braid groups

In this talk I will present a general background on virtual knot theory, then I will present normal forms on virtual braid groups, finally we'll see how this can help us to solve the genus problem for virtual braids.

Virtual knot theory was defined by L. Kauffman at the late 90's, it is a generalization to classical virtual knot theory. They are defined via knot - type diagrams identified up to certain Reidemeister type moves, however they have a topological counterpart as knots embedded in thickened surfaces, identified up to isotopy, diffeomorphisms and "stability". Virtual braids are the braid version of virtual knots and we have an Alexander and Markov theorem for virtual knots. Virtual braids generalize classical braids (i.e. classical braids embeds in virtual braids), however the properties of classical braids do not extend straight forward to virtual braids, for example solutions to the word problem, representations or normal forms on virtual braids are not as easy as in the classical case.