Crossing changes and attaching handles for surface–knots

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Abstract

A surface–knot is an embedded connected orientable surface in 4–space. A surface diagram is a generic projection of a surface–knot into 3–space with crossing information. A surface diagram may contain double curves, triple points and branch points. Some surface diagrams have special closed double curves, in which we can apply crossing changes to obtain a trivial surface. On the other hand, attaching some 1–handles to a surface–knot, we can obtain a trivial surface. In this talk we will show that a crossing change on a surface diagram relates to attaching 1–handles to the surface diagram. We will demonstrate those operations by a sequence of local deformations on surface diagrams.