Cross-exchangeable cycles and 1-handles for surface diagrams

Tsukasa Yashiro

Graduate School of Science, Osaka City University

A surface-knot is an embedded closed oriented surface in 4-space. A surface diagram is the image of a projection of a surface-knot into 3-space with crossing information. For every surface-knot, we can attach some 1-handles to obtain a trivial surface. The minimal number of such 1-handles is called the unknotting number of the surface-knot. Some surface diagrams have special double curves, in which we can change the crossing information to obtain a trivial surface. In this talk we will discuss about a relation between the number of such special double curves, which may have multiple points and the number of 1-handles needed to obtain a trivial surface.