Unknotting positive fibered knots

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Résumé

Just how knotted is a knot? One way to measure this is to find the minimal number of times we have to pass the knot through itself in order to transform it into the unknot. This number is known as the unknotting number, one of the most studied knot invariants. Despite extensive research, the unknotting number remains unknown for many low-crossing knots, and there is no general algorithm known to determine it.
However, thanks to the results of Rudolph and others, we know that the unknotting number of a braid-positive knot coincides with its Seifert genus, which can be computed more easily. For a slightly more general class of knots, the positive fibered knots, Stoimenow conjectured in 1998 that the same holds true.

In our attempt to prove this conjecture, we discovered a potential counterexample for which no existing method for determining the unknotting number was effective.
This is based on joint work with M. Kegel, L. Lewark, N. Manikandan, F. Misev, and M. Silvero: https://arxiv.org/pdf/2312.07339

*Intervenant