

Knot Traces and Sliceness

Isaac M. Craig
Joint with Paul Melvin

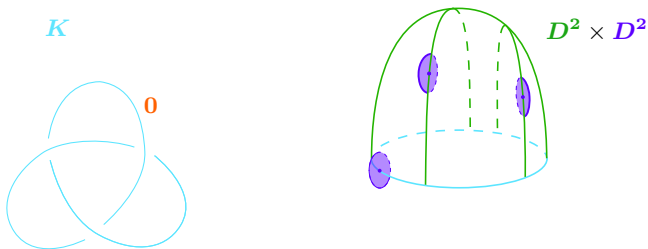
Bryn Mawr College

GSTGC
30 March 2019

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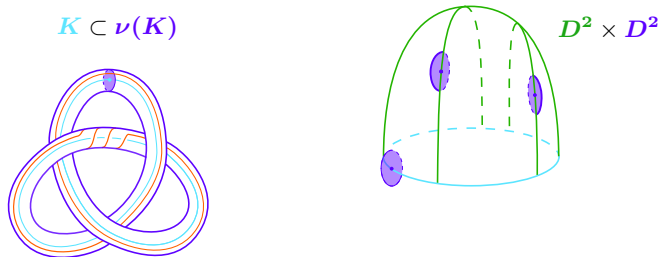
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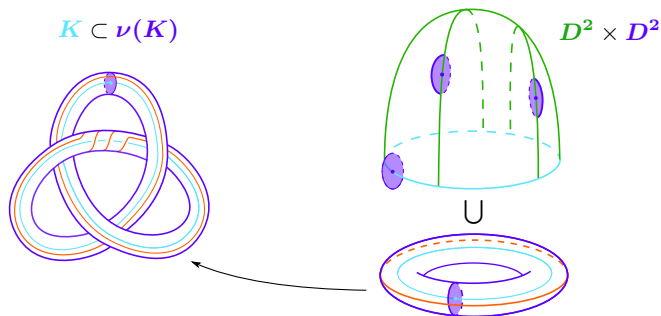
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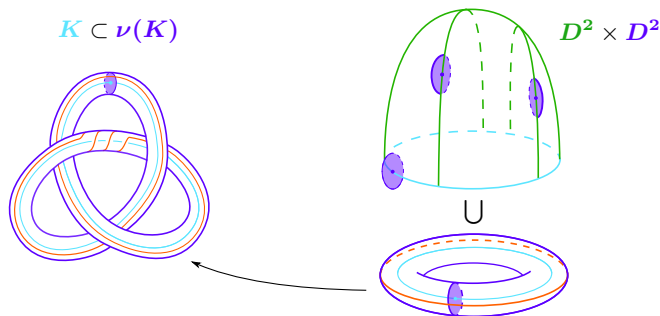
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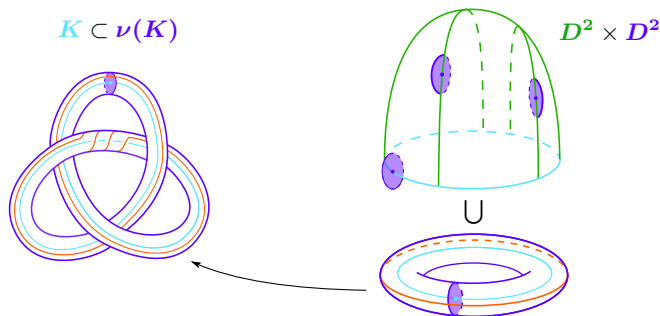
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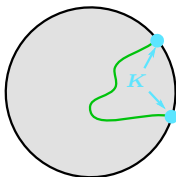


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Question. Do properties of K correspond to properties of $X(K)$, and conversely?

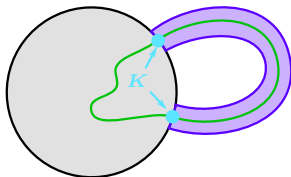
Slice Knots

A knot $K \subset S^3 = \partial B^4$ is **slice** if it bounds a smoothly embedded disk $D^2 \hookrightarrow B^4$.

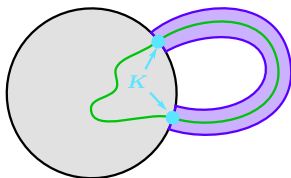


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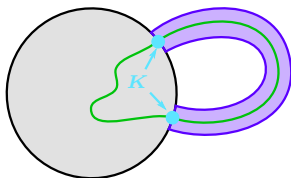


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Remark. The core of the 2-handle and slice-disk form a smoothly embedded S^2 .

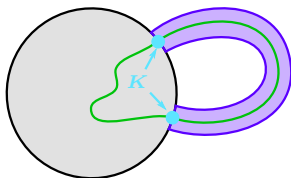
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Theorem. Let K and K' be knots with diffeomorphic traces $X(K) \cong X(K')$. Then K is slice if and only if K' is slice.

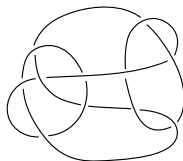
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Theorem. (Piccirillo [1]) The Conway knot is not slice.



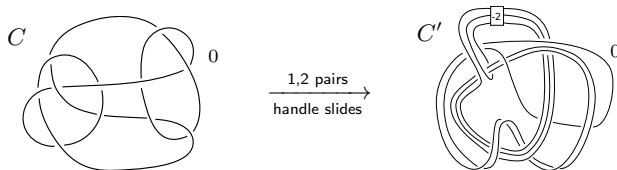
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Proof Technique. Construct knot C' with $X(C) \cong X(C')$. Show C' is not slice.

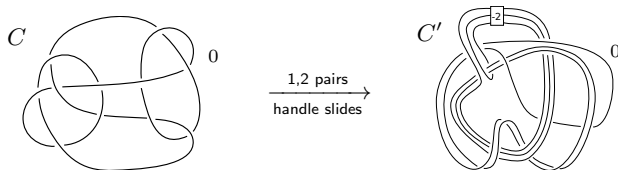
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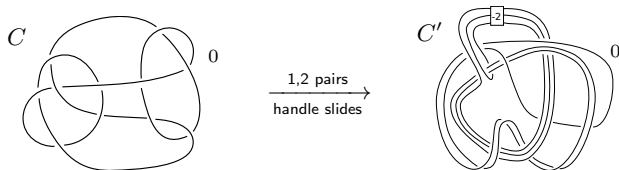


Remark. This construction is known to work for unknotting number 1 knots.

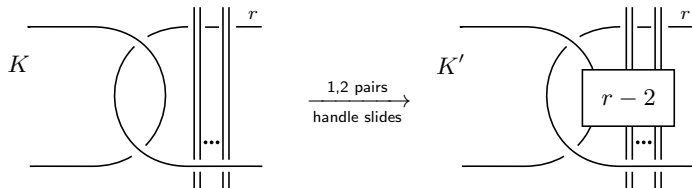
The Conway Knot

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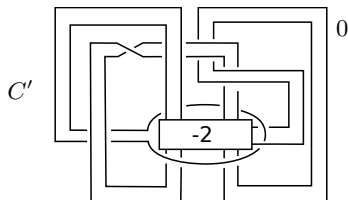
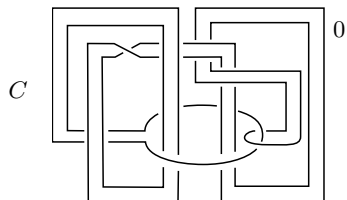
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New C and K'



Bibliography I



Lisa Piccirillo,

Shake genus and slice genus,

arXiv:1803.09834, to appear in G&T (2018).