

Unknotting submanifolds of the 3-sphere by twistings

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Abstract. By the Fox's re-embedding theorem, any compact submanifold of the 3-sphere can be re-embedded in the 3-sphere so that it is unknotted. It is unknown whether the Fox's re-embedding can be replaced with twistings. In this paper, we will show that any closed 2-manifold embedded in the 3-sphere can be unknotted by twistings. In spite of this phenomenon, we show that there exists a compact 3-submanifold of the 3-sphere which cannot be unknotted by twistings. This shows that the Fox's re-embedding cannot always be replaced with twistings.

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