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Thin position in the theory of classical knots. (English) [Zbl 1097.57013](#)

Menasco, William (ed.) et al., Handbook of knot theory. Amsterdam: Elsevier (ISBN 0-444-51452-X/hbk). 429-459 (2005).

This is an expository survey of the role that the notion of “thin position” has played in the theory of classical knots and, more generally, in the understanding of knotted graphs in 3-space. This particular technique exploits heavily the fact that the ambient manifold is S^3 and not another manifold.

From crossing number to bridge number and to width the author presents how thin position interacts with geometric properties of a knot, in particular with an essential surface in the knot complement. The extension of thin position to graphs, beyond being of interest in its on right, also is shown to have applications in knot theory. There is a remarkable application of thin position that occurs as a crucial step in Thompson’s recognition algorithm for the 3-sphere. Some related applications to other decision problems in 3-manifold topology are presented.

For the entire collection see [[Zbl 1073.57001](#)].

Reviewer: [Corina Mohorianu \(Iași\)](#)

MSC:

[57M25](#) Knots and links in the 3-sphere (MSC2010)

[57M15](#) Relations of low-dimensional topology with graph theory

Cited in **10** Documents

Keywords:

[knots](#); [graphs](#); [3-manifolds](#)

Full Text: [arXiv](#)