

**Rubinstein, J. Hyam**

**Minimal surfaces in geometric 3-manifolds.** (English) [Zbl 1119.53042](#)

Hoffman, David (ed.), Global theory of minimal surfaces. Proceedings of the Clay Mathematics Institute 2001 summer school, Berkeley, CA, USA, June 25–July 27, 2001. Providence, RI: American Mathematical Society (AMS). Cambridge, MA: Clay Mathematics Institute (ISBN 0-8218-3587-4/pbk). Clay Mathematics Proceedings 2, 725-746 (2005).

This article looks more like a survey of results concerning existence and topology of minimal surfaces imbedded in 3-manifolds carrying one of Thurston geometries. Sketchy proofs of several theorems are included. Some results concern also minimal hypersurfaces in 4-manifolds of positive Ricci curvature. For example (Thm. 2.3): if  $W$  is a compact orientable 4-manifold of positive Ricci curvature and  $M$  is a closed orientable embedded minimal 3-manifold, then both of the complementary domains for  $M$  in  $W$  have 2-dimensional spines, or dual handle presentation with only 2-, 3- and 4-dimensional handles attached to a thickened copy of  $M$ .

For the entire collection see [\[Zbl 1078.53002\]](#).

Reviewer: [Paweł Walczak \(Łódź\)](#)

**MSC:**

[53C42](#) Differential geometry of immersions (minimal, prescribed curvature, tight, etc.)

Cited in **4** Reviews  
Cited in **11** Documents

**Keywords:**

[minimal surface](#); [Thurston geometry](#)