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**Separating incompressible surfaces and stabilizations of Heegaard splittings.** (English)

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Math. Proc. Camb. Philos. Soc. 137, No. 3, 633-643 (2004).

The authors develop an approach for the description of 3-manifolds containing closed separating incompressible surfaces of arbitrary large genus and find a “simplest” manifold of such sort. This result provides two applications.

1. For a closed orientable 3-manifold  $M$  and any positive integer  $m$  the surgery along any link  $L$  in  $M$  with at most  $2m + 1$  components provides an irreducible 3-manifold containing  $m$  disjoint non-parallel separating surfaces of arbitrarily high genus.
2. There exist 3-manifold  $M$  containing separating incompressible surfaces  $S_n$  of arbitrarily large genera  $g(S_n)$  such that the amalgamation of minimal Heegaard splittings of two resulting 3-manifolds cutting along  $S_n$  can be stabilized  $g(S_n) - 3$  times to a minimal Heegaard splitting of  $M$ .

Reviewer: [Vassily O. Manturov \(Moskva\)](#)

**MSC:**

57N10 Topology of general 3-manifolds (MSC2010)

57M50 General geometric structures on low-dimensional manifolds

57N16 Geometric structures on manifolds of high or arbitrary dimension

Cited in **23** Documents

**Keywords:**

[Heegaard splitting](#); [incompressible surface](#); [amalgamation](#); [stabilization](#)

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